Ontario

Ontario Geological Survey
Open File Report 6128

Report of Activities, 2003 Resident Geologist Program

Thunder Bay North Regional Resident Geologist Report: Thunder Bay North District

2004

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ONTARIO GEOLOGICAL SURVEY

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by

M.C. Smyk, G.D. White, M.A. Magee and C. Komar

2004

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Ontario

Ontario Geological Survey
Resident Geologist Program

Thunder Bay North Regional Resident Geologist (Thunder Bay North District)—2003

by

M.C. Smyk, G.D. White, M.A. Magee and C. Komar

2004

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THUNDER BAY NORTH DISTRICT—2003

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INTRODUCTION

The Thunder Bay North District encompasses Lake Nipigon and extends over 500 km north from Highway 11 to the Hudson Bay Lowlands. The following towns and First Nation (FN) communities are situated within the district: Angling Lake (Wapakeka FN), Armstrong, Beardmore, Bearskin Lake FN, Big Trout Lake (Kitchenuhmaykoosib Inninuwug FN), Cat Lake FN, Fort Hope (Eabametoong FN), Geraldton, Gull Bay FN, Jellicoe, Kasabonika FN, Kingfisher Lake FN, Lansdowne House (Neskantaga FN), Longlac, Macdiarmid, Nakina, North Caribou Lake (Weagamow FN), Osnaburgh House (Mishkeegogamang FN), Pickle Lake, Summer Beaver (Nibinamik FN), Webequie FN and Wunnummin Lake FN.

MINING ACTIVITY

Musselwhite Mine

Musselwhite Mine (Placer Dome (CLA) Limited (68%) and Kinross Gold Corporation (32%)) is located approximately 126 km north of Pickle Lake. Access to the mine site is by means of an all-weather airstrip or a 43 km, all-weather gravel road connecting the mine site to the northern extension of Highway 599. Musselwhite is a fly-in operation with pickup points in Thunder Bay and 5 northern communities. The mine employs 293 full-time employees and 105 contract personnel providing support services. First Nation contractors provide air transportation and camp services (http://www.placerdome.com/operations/musselwhite/musselwhite.html).

Musselwhite Mine is situated in the North Caribou greenstone belt of the Sachigo Subprovince. Supracrustal rocks have been regionally metamorphosed to amphibolite facies. Gold mineralization is predominantly stratabound in folded banded iron formations (http://www.placerdome.com/operations/musselwhite/musselwhite_geology.html). The largest deposit, the T-Antiform, is an antiformal "wrinkle" of the Northern Iron Formation, which occurs within the hinge of the East Bay Syncline. It has, to date, been traced over 3 km. From its outcrop at surface, the T-Antiform plunges 10 to 15° to the north. The host rock to gold mineralization is typically a grunerite-garnet-amphibole-chert iron formation. Mineralized zones are characterized by abundant pyrrhotite, rare arsenopyrite, quartz flooding and rare, visible gold. These zones are, in general, subvertical with an amplitude of 150 m. On a local scale, the T-Antiform deposits can be subdivided into the S, C, T and WA zones. Other deposits, such as the PQ, Esker and West zones occur in second-order, anticlinal "wrinkles" on the limbs of the East Bay Synform. The West Anticline deposits occur in broad, relatively open folds of an anticlinorium to the northwest of the mine (ibid.).

In 2003, the mine produced 222 465 ounces of gold from 1 330 321 t at a grade of 5.45 g/t Au. From 1997 to 2003, 8 380 321 t of ore were mined and processed to produce 1 466 248 ounces of gold (http://www.placerdome.com/operations/musselwhite/musselwhite_mining.html). Ore reserves as of December 31, 2003, were 11 274 000 t at a grade of 5.69 g/t Au for a total of approximately 2.1 million contained ounces (1.34 million ounces proven and 0.72 million ounces probable). With current mineral reserves, Musselwhite has an expected mine life projected through to 2012 (http://www.placerdome.com/operations/musselwhite/musselwhite.html).

Table 1. Mine production and reserves in the Thunder Bay North District in 2003.

Mine	Production to end of 2002		Production in 2003		Reserves at end of 2003	
	Tonnage @ Grade	Total Commodity	Tonnage @ Grade	Total Commodity	Tonnage	Grade
Musselwhite Mine	7 050 000 t @ ~ 5.48 g/t Au	1 243 783 ounces gold	1 330 321 t @ 5.45 g/t Au	222 465 ounces gold	11 274 000 t	5.69 g/t Au

Access to the ore is by means of a ramp. A conveyor system was installed in 2002 to haul ore from all levels of the mine. The mining plan for the T-Antiform deposit consists of 4 phases, organized according to depth from surface (http://www.placerdome.com/operations/musselwhite/musselwhite_mining.html). Phase 1 production began in 1997, during which the majority of the mineral reserves from surface to the 275 m level were mined out at a rate 2700 t per day. Production was eventually increased to 3300 t per day by expanding the fleet of 40 t haul trucks. Phase 2 production, consisting of mineral reserves between the 275 m and 375 m levels, began in 2001. Supplemented by the remaining reserves above the 275 m level, phase 2 has achieved a mining rate of 3500 t per day using the same fleet of 40 t haul trucks. Phase 3, consisting of mineral reserves between the 375 m and 500 m levels, began production in July 2002. Development of this phase began in the final quarter of 2001 and will continue through the first quarter of 2005. Due to the increasing depth of the remaining reserves, an underground crushing and conveying system has been installed. With this system, the production rate has increased to 3800 t per day. Phase 4, targeting of the remaining mineral reserves in the T-Antiform between the 500 m and 675 m levels, started during the second half of 2003. Phase 4 production will start in the first half of 2005. Two mining methods are employed in the T-Antiform. Transverse stopes are developed where mining widths are greater 15 m. Longitudinal retreat mining is employed in areas with widths less than 15 m. Rock mass quality within the deposit is generally good and free of strong jointing and faulting (ibid.).

Development of the PQ mineral reserve began in 2003; production started in September 2003. Conventional long-hole mining methods will be employed at a planned rate of 550 t per day. Development in the Esker Zone is currently scheduled to take place in 2004 and 2005. Production is to begin in 2006 at a rate of 1000 t per day. Due to the isolation and geometry of the Esker deposit, automated mining is being investigated. The West Anticline deposit is scheduled to be extracted at the end of the mine life. The mining method employed here will be modified room and pillar. Due to its location beneath the polishing pond and it close proximity to the shop and warehouse buildings, production from the Snoppy pit deposit is also scheduled to begin towards the end of the mine life. Two dikes will be constructed within the pond to allow open cut mining. Production from the Snoppy pit will average 1200 t per day (ibid.).

The mine property consists of nearly 17 000 ha of claims and leases. Numerous targets have been identified, from grassroots exploration in the far reaches of the property, to extensions of existing deposits closer to mine workings. Recent developments in the geological model at Musselwhite have identified gold mineralization associated with shear zones that displace the prospective Northern Iron Formation, and also gold mineralization in quartz-carbonate veins in the Southern Iron Formation; the latter is located approximately 100 m stratigraphically below the Northern Iron Formation. Notably, the PQ Deep Zone, located near existing mine workings, was identified in 2002 and was the primary focus of the exploration program for 2003 (http://www.placerdome.com/operations/musselwhite/musselwhite_expl.html). Other exploration was budgeted for the following targets: PQ Deeps / T-Antiform Deeps; Esker / Island Zones; Esker; Esker North Deposit; West Anticline; Kenpat; Libert Lake-L1 Showing; Graff Lake; Northwest Recon; 802 Target; U/G A-Anticline; and U/G Red Wing Development (Gagnon 2003) .

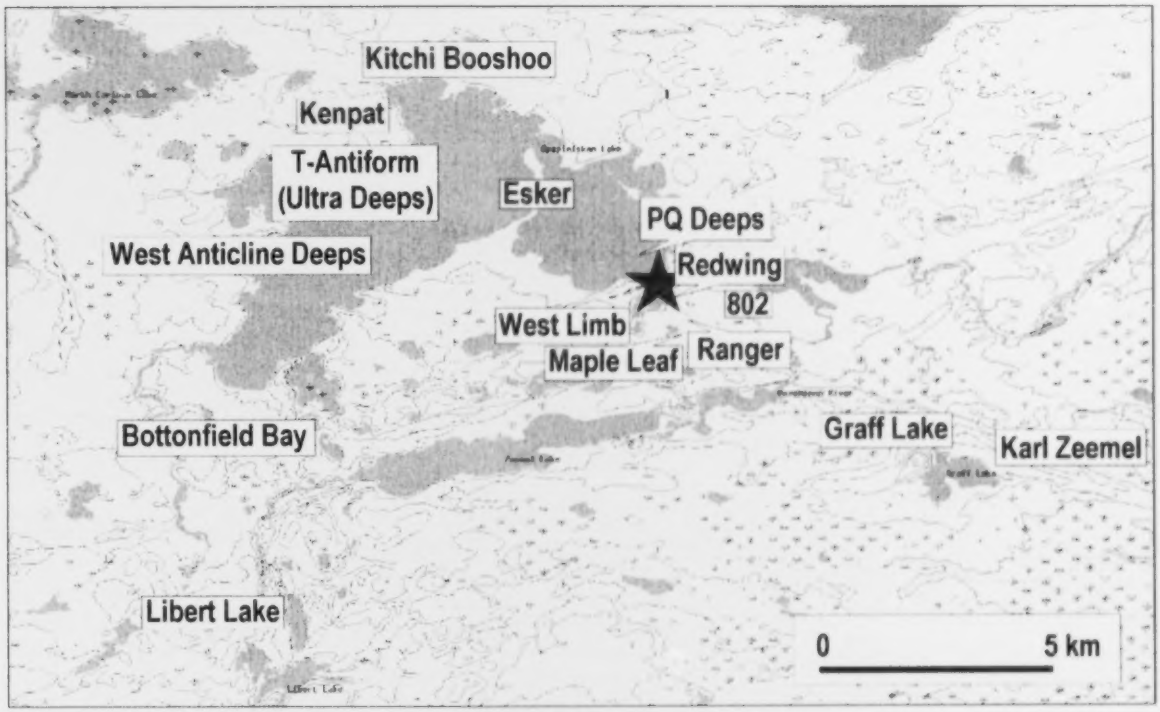

Figure 1. Exploration targets near Musselwhite Mine (denoted by star).

Exploration continues to focus on the conversion of existing resources to reserves, the extension of known resources and the definition of new "grassroots" prospects. To aid this process, particular attention has been paid to understanding the structural architecture of the mine area. To this end, a detailed three-dimensional, lithologic and structural model has been developed. All existing infrastructure, resource and reserve models and drill hole databases are included in this interactive model. The model is used on a daily basis to direct and review all exploration. Exploration during 2004 will focus on defining and extending reserves and resources at PQ Deeps, Island, Esker South and Esker North. Regional exploration will be conducted at Kenpat, Karl Zeemel, Libert Lake, Graf Lake and the Ranger South area (http://www.placerdome.com/operations/musselwhite/musselwhite_expl.html).

A six-day program of helicopter-supported regional mapping was undertaken to investigate a number of magnetic anomalies (i.e., possible banded iron formations), to compare the structure of the region to that of the mine area, and to have an initial look at the geology of the newly acquired Karl Zeemel prospect, south of the mine (*Inside Musselwhite Mine* newsletter, September 2003). In addition to sampling and analysis of veins, 108 lithogeochemical samples were also collected. These results will be used in conjunction with those gleaned from current mine site drilling, to develop a gold mineralization and exploration model (ibid.).

EXPLORATION ACTIVITY

Mining Lands

There were 5292 claim units staked in the Thunder Bay North District in 2003; a total of 6645 claim units were cancelled. As of December 31, 2003, there were 19 695 active claim units in the District.

Sixty-seven exploration programs were undertaken in 2003 (Table 3) in the Thunder Bay North District. Gold was the most sought-after commodity, followed by platinum group metals, base metals and diamonds. There was no rare metal exploration in the district in 2003. Mining Lands statistics (e.g., number of active claims, claims staked, assessment expenditures, etc.) for 2003 were not available at the time of writing.

Gold

NORTH CARIBOU LAKE AREA

Placer Dome North America Ltd. carried out a number of exploration projects in the vicinity of the Musselwhite Mine (*see* "Mining Activity").

Romios Gold Resources Inc. announced the planned resumption of diamond drilling on its Lundmark–Akow Lake property, located in the centre of the North Caribou Lake greenstone belt, north of Musselwhite Mine (News Release, Romios Gold Resources Inc., November 21, 2003). The program was to involve a minimum of 1000 m of drilling and was expected to commence by the end of November 2003, after all the equipment and supplies were mobilized to the property. Romios subsequently suspended the proposed drilling program, pending discussions with the North Caribou Lake First Nation Community relating to the further exploration of the Lundmark–Akow Lake property (News Release, Romios Gold Resources Inc., January 19, 2004). Previously (*see* Press Release issued on September 24, 2003), it was announced that a deep-penetration ground geophysical survey was successful in providing a greater resolution and definition of electromagnetic anomalies that overlie an extensive zone of stringer-type copper mineralization that management believes may be a reflection of a more massive copper-gold zone. It was also announced that the survey detected 2 additional, high-priority conductors on the property that previously were unknown. The principal focus of the diamond drill program will be to test these geophysical anomalies in the vicinity of the known copper-gold mineralization (ibid.).

PICKLE LAKE AREA

MetalCORP Limited began work on its properties (Tarp, Metcalfe and Connell) in the Pickle Lake area in 2003. Overburden stripping carried out by MetalCORP to expose the bedrock confirmed the presence of high-grade gold in quartz veins hosted by strongly carbonatized mafic metavolcanic rocks and spatially associated with quartz-feldspar porphyries (News Release, MetalCORP Limited, September 25, 2003). Sampling of the Metcalfe vein yielded high-grade gold assays from grab samples, up to 2232.92 g/t Au. A new gold zone, called the Seven zone, which contains two narrow quartz veins was discovered approximately 200 m north of the Metcalfe vein. Vein 1 yielded 34.15 g/t Au in a 12 cm channel sample and Vein 2 yielded 21.56 g/t Au in a 10 cm channel sample. The veins are 5 m apart and hosted in strongly carbonatized mafic metavolcanic rocks (ibid.). An airborne magnetic survey was flown in late 2003 (News Release, MetalCORP Limited, October 23, 2003) (*see* "Property Examinations", this report).

Continuum Resources Inc. and **Prospector Consolidated Resources Inc.** carried out an extensive program of backhoe trenching and hydraulic stripping on the McVicar Lake property, situated 75 km west of Pickle Lake (News Release, Prospector Consolidated Resources Inc., December 12, 2003). The objective of this trenching program was to expose bedrock for mapping and geochemical sampling along extensions of known zones, and in new areas which have not been previously explored. The most anomalous channel sample (Sor Lake zone), oriented perpendicular to the largest structure, assayed 24.99 g/t Au over 0.50 m while the highest grab sample assay from quartz-carbonate alteration in the zone was 122.94 g/t Au. Highly anomalous results have been returned from all 3 areas where the trenching and stripping were targeted, namely the Altered zone, the Shonia Lake zone, and the Sor Lake zone. These zones are approximately 4 to 6 km apart but are linked by major, through-going structures along which gold mineralization is known to occur. The tenor of the results, the nature of the geology, combined with past drilling by BHP Canada, then Continuum Resources in the winter of 2002–2003, indicated that further drilling is warranted in all 3 zones. Continuum and Prospector consider all 3 zones as targets for further drill testing and are presently reviewing various options. To date, during 2003, Continuum had spent in excess of $550 000 on exploration, which exceeds its obligations under the option agreements (ibid.).

Troon Ventures Ltd. provided an update of this year's exploration activities at its Fry Lake property, 85 km north of Sioux Lookout (News Release, Troon Ventures Ltd., November 12, 2003). Previous exploration in the 1940s and 1980s identified 2 areas, Flicka and Fry Lake #9, of shear-hosted, quartz-carbonate veining containing significant gold values. The Flicka zone hosts 3 north-trending veins. The veins have been traced along strike for up to 80 m with widths variable to 1.5 m. To the north, the veins are overburden-covered, to the south they pass into

Fry Lake. Prospecting by Troon personnel located a 500 m long and open zone of shear-related quartz veining containing anomalous gold values peripheral to the #9 zone. Within the zone, grab samples returned up to 1.031 g/t Au (ibid.).

King's Bay Gold Corporation completed a magnetometer and VLF-EM survey over a 40.4 km grid on its Pickle Lake property (News Release, King's Bay Gold Corporation, September 17, 2003). King's Bay later recived an evaluation of their land holdings and then commissioned a geological report (News Release, King's Bay Gold Corporation, October 28, 2003). The property hosts 3 main areas of gold mineralization and past exploration: Southwest Powderhouse; Number 6 – Field Iron Formation (Springer); and Fault Creek–Dona Lake. The first 2 areas are southwest of, and adjacent to, the past-producing Pickle Crow Mine, while the other is situated next to the past-producing Dona Lake Mine. A budget of approximately $1 million was suggested, including mapping, sampling and drilling (ibid.).

Cantera Mining Ltd., who had been in the process of constructing a 225 ton-per-day mill and stockpiling ore from the No. 1 (Howells) vein at the Pickle Crow Mine, is in receivership (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). A surface management agreement had been granted by Pickle Crow Gold Mines Limited (wholly owned by Wolfden Resources Inc.) to Cantera in June 2000 (Canadian Mines Handbook, 2003–2004, p.530). There has been no activity on-site since early 2003. The future of the project is uncertain, pending resolution of outstanding financial issues.

FORT HOPE AREA

Landore Resources Inc. started a 3500 m diamond drill program in November 2003 on their Miminiska Lake property. The program was designed to further define the Zone 8 shoot, delineated during the drilling campaign completed in May 2003 (News Release, Landore Resources Inc, October 20, 2003). Field exploration also took place at Wottam Lake, contiguous and to the east of the Miminiska Lake property. Old, unmapped trenches exposing sulphide-mineralized zones up to 10 m wide, were discovered along a trend of airborne EM conductors.

Thirteen diamond drill holes (0603-19 to 0603-31), totaling 2221.7 m were drilled on the property in the drill program that started in late November 2003 (News Release, Landore Resources Inc, February 03, 2004). Other objectives of the program were to test the down-plunge and strike extension of the Baseline Z5 shoot and the strike extension of gold mineralization intersected in hole 0603-12 (5.4 g/t Au over 4.5 m) (ibid.). Significant assay results are tabulated below:

Drill Hole	From (m)	To (m)	Intersection (m)	Au (g/t)
0603-19	35.6	37.0	1.4	6.0
0603-20	69.9	72.1	2.2	9.8
(includes)	71.2	72.1	0.9	18.8
0603-20	81.4	82.5	1.1	4.1
0603-21	24.2	27.9	3.7	2.6
0603-22	152.4	155.4	3.0	5.0
(includes)	154.4	155.4	1.0	9.5
0603-24	154.5	155.4	0.9	4.4
0603-24	159.4	160.4	1.0	5.3
0603-26	34.7	35.5	0.8	17.1
0603-30	188.3	189.9	1.6	5.3
0603-30	203.2	204.8	1.6	5.1
0603-30	225.2	226.0	0.8	3.3
0603-31	166.1	169.6	3.5	6.0
(includes)	166.1	167.2	1.1	11.6

Drill Hole	From (m)	To (m)	Intersection (m)	Au (g/t)
0603-31	172.9	173.8	0.9	4.8
0603-31	178.2	180.6	2.4	3.0
0603-31	183.5	184.6	1.1	3.4

Drilling did not extend the Baseline Z5 shoot significantly beyond depths previously tested. However, holes 30 and 31 (the lateral step-out holes from hole 12) intersected multiple, altered, sulphide-enriched, gold-mineralized zones. The best assay returned from hole 31 was 6.0 g/t Au over 3.0 m, including 11.6 g/t Au over 1.1 m (ibid.). Gold mineralization is associated with pyrrhotite-arsenopyrite mineralization within zones of strong quartz veining or flooding in iron formation. Further drilling was scheduled to commence in February 2004 on the Miminiska property to follow up mineralization intersected in hole 0603-31 and other favourable targets, followed by drilling on the adjacent Wottam and Frond properties to the east (ibid.).

Slam Exploration Ltd. announced an option agreement to acquire the Miminiska–Keezhik gold project from **1533687 Ontario Limited**, a company administered by **Tau Capital Corp.** (News Release, Slam Exploration Ltd., October 9, 2003). The Miminiska–Keezhik project comprises 4 separate claim blocks that encompass several gold-bearing structures and individual gold occurrences, many of which were identified by the Noramco group of companies in the 1980s: Keezhik Lake, Miminiska Lake, Miminiska Peninsula and Brash Lake. Slam intends to expand induced polarization (IP) coverage to further define drill targets. The project includes 2 areas identified as possible areas of interest through lake sediment geochemistry completed under the Ontario Geological Survey's *Operation Treasure Hunt*. All of the gold occurrences in the project area occur within a similar geological environment and have similar features to the Reserve Creek and Opikeigen Lake gold projects near Fort Hope. Slam now has interests in approximately 1000 claim units, including the Reserve Creek gold project, where **Eastmain Resources Inc.** has an option to spend $1.1 million to earn 50%, and the Opikeigen Lake Gold project, where **TNR Resources Ltd.** can earn 50% by spending $500 000. Slam will maintain a significant interest in these mineral properties while earning in on the Miminiska–Keezhik project (ibid.). Slam later announced the staking of the Cadman Lake gold property (News Release, Slam Exploration Ltd., October 31, 2003). Previous workers discovered a gold-bearing zone by diamond drilling on the property in 1987. Assessment files indicate that 8 diamond drill holes tested the zone over a strike length of 150 m. Six of the holes intersected gold mineralization ranging from anomalous to ore grade. The most significant intercept was reported at 0.61 ounce Au per ton over a core interval of 1.4 m. Brecciated mafic tuffs and iron formation with pyrite host the gold mineralization (ibid.).

Slam Exploration Ltd. and **Eastmain Resources Inc.** released results from their seven-hole, 966.5 m drilling program on the Reserve Creek gold property (News Release, Slam Exploration Ltd., September 04, 2003). Diamond drilling extended the depth of known gold mineralization in the Williamson A and B zones, previously discovered by Dome Mines Limited. Drill holes RS03-01, -02, -04, -05 and -06 intersected significant gold-bearing intervals, including 40.9 g/t Au over 0.50 m and 7.73 g/t Au over 4.1 m in RS-03-03 and RS-03-02, respectively. Results from holes RS-02 and -06 indicated that both the A and B high-grade zones are open at depth below 125 m. Additional drilling is required to further delineate both the lateral and depth extensions of these zones. The A and B zones are situated within a west-trending, mineralized corridor extending 7 km across the property. The companies plan to continue exploration on the Williamson gold zones and test additional targets within the gold-bearing corridor (ibid.).

TNR Gold Corp. amended the agreement (first announced October 22, 2002) between TNR, **Slam Exploration Ltd.**, and **Pure Gold Minerals Inc.** on the Opikeigen Lake property (News Release, TNR Gold Corp., October 31, 2003). According to the Amended Agreement, TNR will have the right to acquire a 50% interest in the project by spending a total of $500 000 over the first 3 years on exploration and project maintenance including taxes. The Opikeigen property is host to 10 gold prospects over a strike length of 8 km, the most significant to date being the OL12 and OL29 zones. Geophysical exploration conducted in 2003 provided numerous targets that TNR expects to drill during the winter of 2003–2004 (ibid.).

Candor Ventures Corp. has decided to accelerate its exploration activities on its wholly-owned Miminiska Lake iron formation-hosted gold property, west of Fort Hope (News Release, Candor Ventures Corp., November 28,

2003). Candor's Miminiska property hosts a high-grade gold intersection (values of up to 33.5 g/t Au) on the south limb of a folded iron formation. Recent Mobile Metal Ion (MMI) soil analyses confirmed highly anomalous gold values within a broad arsenic anomaly over, and down-plunge from, the fold closure (ibid.). Line cutting and detailed ground magnetic and induced polarization (IP) surveys were initiated in January 2004 in order to generate drilling targets (News Release, Candor Ventures Corp., January 22, 2004).

ONAMAN–TASHOTA AREA

Kodiak Exploration Limited optioned several properties in the Tashota area. First, the Knucklethumb property from **Cameco Corp.**, and an entity known as the "Metcalfe Syndicate" (News Release, Kodiak Exploration Limited, November 20, 2003). The Knucklethumb property covers approximately 11 km in an east-west direction and 2 to 3 km in a north-south direction. Mineralization is associated with 3 main shear zones, each extending westward for 3 to 4 km from the east-central part of the Knucklethumb property to beyond its western property boundary, for an aggregate of some 9 to 10 km of prospective strike length. The shear zones trend westerly and remain open to the west. The portion of the Knucklethumb property acquired from the Metcalfe Syndicate provides an additional 3 km of ground along strike from one of these shear zones. Historic exploration has noted visible gold in outcrop on several parts of the property with grab samples up to 2498 g/t Au. Seventeen high-grade surface showings occur in a west-trending alteration zone over a distance of approximately 4 km. Historical surface channel samples had values of up to 145 g/t Au over 0.3 m, 5.2 g/t Au over 4.5 m and 44.2 g/t Au over 2 m. As well, diamond drilling intersected values up to 6.2 g/t Au over 5.8 m. The company plans to complete an extensive geological compilation of approximately $2 million worth of data in preparation for an aggressive exploration program, which is planned to include 5000 m of diamond drilling (ibid.).

Kodiak Exploration Limited also announced that it executed an option agreement to acquire a 100% interest in an additional property from 2 arm's-length individuals (News Release, Kodiak Exploration Limited, December 03, 2003). The company has acquired the right to acquire 11 patented claim units located in Oboshkegan Township (collectively termed the "Hull Lake property", but traditionally known as the Noffke Claims). The Hull Lake property is contiguous with the company's Knucklethumb property. There are few records of the historic trenching and drilling, but an assay of 5.14 g/t Au over a core length of 1.5 m is reported to have been obtained by Hull Lake Gold Mines in 1946 in the course of a 2800-foot, 12 to 15 hole program (Amukun 1977). According to Amukun (1977), the gold mineralization is along an east-trending shear zone at the contact between metabasalts and felsic lapilli tuff and pyroclastic breccia. The company is in the process of assembling a large land package in this highly prospective area and intends to commence intensive exploration on its acquired properties as conditions permit (ibid.).

Eleven drill holes and a total of 1000 m of drilling were carried out by Kodiak and joint-venture partner, **International Taurus Resources**, on the neighbouring Lincoln property, north of the Canadian National Railway main line, between October 31 and November 16, 2003, to test depth extents of gold mineralization delineated on surface by channel sampling (News Release, Kodiak Exploration Limited, December 01, 2003). Significant zones of gold mineralization were encountered down-plunge from the South Shaft zone on the property and some of these results are summarized in the table below (*from* News Release, Kodiak Exploration Limited, December 01, 2003):

Hole #	From	To	Length (m)	Au (g/t)
LP03-01	23.9	26.1	2.2	1.41
LP03-02	1.5	46.8	45.3	0.37
LP03-03	13.6	15.3	1.7	1.53
LP03-04	37.0	57.7	20.7	1.38
incl.			5.6	3.29
LP03-06	74.1	77.0	2.9	1.48
LP03-11	93.5	106.0	12.5	0.89
incl.			4.0	1.93

Spruce Ridge Resources Ltd. acquired an option to earn 100% interest in a gold property at Hull Lake on Oboshkegan Township (News Release, Spruce Ridge Resources Ltd., December 24, 2003) and had carried out some preliminary work on the property in late 2003 (*see* "Property Examinations", this report). Previous work on the Spruce Hull Lake property by the optionor, N.W.T. Copper Mines Ltd., consisted of stripping, trenching and channel sampling, which has outlined a series of anomalous gold occurrences. The Spruce Ridge 2003 program focused on expanding a stripped area that had been opened up by N.W.T. Copper Mines Ltd. where anomalous to low-grade gold mineralization had been identified but not fully delimited in 2002 (News Release, Spruce Ridge Resources Ltd., January 08, 2004). The stripped area has been expanded by Spruce Ridge from its initial area of 2250 m^2 to approximately 6000 m^2, extending a maximum of 200 m from north to south and 125 m from east to west. Spruce Ridge plans a second stage of exploration on the Spruce Hull Lake property in the spring and summer of 2004. It will consist of diamond drilling in the presently stripped area to define the geometry and subsurface extent of some of the mineralized zones located to date, with additional surface exploration on geophysical targets in other areas of the property (ibid.).

Landore Resources Inc. announced the discovery of a gold-bearing zone located approximately 1 km northeast of the B4-7 nickel-copper-palladium-platinum prospect, on their Junior Lake property, northwest of Tashota (News Release, Landore Resources Inc, October 20, 2003). The new discovery (BAM zone) has been exposed for 30 m along strike by trenching. Preliminary grab samples and sawn channel samples have returned values of up to 11.9 g/t Au and 1.49 g/t Au over 1.1 m, respectively. Subsequent channel sampling was carried out across the zone at 5 m intervals and returned assays generally in the 1000 to 1700 ppb Au range over widths of up to 1.2 m, intermittently, along the 30 m exposure with the highest being 4158 ppb Au over 0.3 m. Mineralization consists of moderate to intense silicification, accompanied by finely disseminated pyrite and arsenopyrite, hosted within a system of narrow, discrete shears. The shear system ranges from less than 1 m to approximately 6.5 m in width and occurs near the northern contact of a melagabbro to gabbro sill or dike within amphibolitized, pillowed, mafic flows (ibid.). Six diamond drill holes (0403-01 to 06), totaling 438 m, were drilled to test below the newly discovered BAM Zone, over a 100 m strike length and to a vertical depth of 35 m (News Release, Landore Resources Inc, February 03, 2004). The BAM Zone drilling confirmed the existence of several strongly altered, well-mineralized, south-dipping shear zones within melagabbro and associated, intermediate, feldspar porphyry dikes or sills. Gold mineralization is closely associated with disseminated pyrite, small needles of arsenopyrite, biotite alteration and variable degrees of carbonatization and silicification. Narrow but significant, low-grade gold values were intersected in 3 of the holes. Significant assay results are tabulated below:

Drill Hole	From (m)	To (m)	Intersection (m)	Au (g/t)
0403-02	27.3	28.5	1.2	1.9
0403-04	52.1	52.6	0.5	2.1
0403-05	36.5	37.2	0.8	2.6
	46.4	47.9	1.5	1.2

Drill hole geology of the BAM zone appears structurally complex and requires further review. A local induced polarization (IP) survey will now be completed for the area to trace the sulphide mineralization before further drilling (ibid.).

Canden Capital Corp. carried out some preliminary compilation and prospecting at O'Sullivan Lake on their Aurum project. An exploration budget of $83 700 was recommended, commencing with prospecting and geological mapping of the known gold occurrences covered by the claims. The occurrences would then be mapped in detail and sampled in order to confirm previous results and to determine the nature and attitude of the gold mineralization. Systematic mapping and prospecting will be used to locate additional gold occurrences (Management Information Circular, Canden Capital Corp., September 29, 2003).

Noranda Inc. also continued with their preliminary assessment of **Linear Gold Corp**.'s Kilometre 61 copper-gold property, east of Armstrong, that was optioned early in November (News Release, Linear Gold Corp., November 03, 2003).

BEARDMORE–GERALDTON AREA

Roxmark Mines Limited announced that it had raised sufficient seed capital ($1.3 million) to seek the re-listing of its shares on a Canadian junior exchange and resume its bulk sample program (News Release, Roxmark Mines Limited, November 28, 2003). The company has maintained all of its gold properties in the Beardmore–Geraldton camp, specifically the Magnet Mine, the Bankfield Mine, the Little Long Lac Mine, the Placer Dome–Key Lake property, the McLellan property and the Northern Empire Mine, permitted 200 ton per day mill. As well, it recently acquired the Sand River, Leitch and East Leitch properties from Rio Fortuna Exploration Corp., Teck Cominco Limited and Kinross Gold Corporation, respectively, under favourable terms (ibid.). A geological compilation on the new acquisitions is being completed (Resident Geologist's Files, Thunder Bay North District, Thunder Bay).

The local prospecting community was very active in the Beardmore–Geraldton area. Prospectors such as L. Clarke, R. Cote, N. Cox, H. Goodman Jr., H. Greenland, L. Holt, F. Houghton, D. Kindlaw, A. Lafontaine, C. Lance, M. Nelson, C. Pettit, E. Rutherford, J. Savage and E. Thorsteinson worked on their respective gold properties in 2003.

Platinum Group Elements (PGE)

PGM Ventures Corporation initiated an exploration and evaluation program on their Thierry Mine property at Pickle Lake. The principal activities undertaken in 2003 were (i) a drill program to test strong geophysical anomalies on the west-trending Thierry structure to the west of the past-producing Central Patricia gold mine, and (ii) an examination of the options available (including request for proposal) for the proposed de-watering of the Thierry mine and a subsequent drill program to define a new ore reserve base (Half Yearly Report, PGM Ventures Corporation, September 22, 2003). The drill program consisted of 4 holes to test promising geophysical anomalies at the junctions of northwest-trending structures close to the point where they intersect the Thierry structure. All targets proved to consist of highly contorted sulphides and quartz in what appeared to be a highly favourable environment for gold mineralization. Regrettably, however, no economic values were encountered in those holes (ibid.). Although the Thierry mine has a substantial drill database of over 1000 holes, they were only ever assayed for copper and nickel. Only approximately 5% of Thierry's drill holes were assayed for precious metals. Platinum group metals, gold and silver account for approximately 40 to 50% of the Thierry ore's value at today's metal prices. Consequently, before consideration can be given to re-opening the mine an underground drill program will be required to define a mineable reserve (ibid.). At the time of mine closure, the previous operator estimated a remaining ore reserve of 15.5 million tonnes grading 1.98% Cu. Approximately 45% of Thierry's reserves are classified as being "breccia" or "bornite" ores. These ores consistently contain grades of 2 to 5 g/t PGE or better. In the best-developed "bornite" ores, values of greater than 10 g/t PGE are not uncommon, with the best value encountered to date being 42 g/t PGE. Although the sample base is limited, where very high PGE values occur, the platinum to palladium ratio is much higher than normally encountered. An independent study of the metallurgical characteristics of the PGE in Thierry's ores was undertaken in the early part of 2003; the results were highly favourable, indicating metal recoveries of 84% and 92% for the 2 ore types, respectively (ibid.). The Thierry mine is fully developed down to a depth of 1600 feet, although mining has only taken place to a maximum depth of 800 feet on the western side of the mine and to 250 feet on the eastern side. Drill stations are already in place on the main 800, 1200 and 1600 feet haulages (ibid.).

The company was considering a number of options in the redevelopment of the Thierry Mine, which it believed could be re-opened at a production level of 800 to 1200 t per day, giving a mine life comfortably in excess of 15 years (Third Quarter Management Discussion, PGM Ventures Corp., November 28, 2003). In January 2004, PGM Ventures Corporation announced that it has entered into a letter agreement to joint-venture the Thierry Mine property with Peabody Capital Partners Corp. (News Release, PGM Ventures Corp., January 23, 2004). The program leading up to a bankable feasibility study will reportedly consist principally of the following: 1) Base line environmental monitoring and acquisition of permits to de-water the mine; 2) de-watering the mine; 3) preliminary rehabilitation of certain underground workings, such as the main development haulages; 4) an underground drill program to confirm existing reserves, prove up additional ore reserves as well as confirm structural controls over the distribution of enhanced ore values; 5) a 5000 t bulk sample to confirm the validity of the drill results; and 6) all other works and studies required to produce a bankable feasibility study (ibid.).

East West Resource Corporation and **Canadian Golden Dragon Resources Ltd.** carried out a drill program on the Norton Lake property, located northeast of Fort Hope (Eabametoong FN)(News Release, East West Resource Corporation, September 04, 2003). Drilling focused on a strong electromagnetic (EM)-induced polarization (IP) target that is interpreted to represent a new lens on the east end of the Norton zone. Additional drilling on the down plunge was also planned. The original Norton zone contained 944 500 t grading 0.72% Ni and 0.56% Cu and is known to contain important credits of platinum, palladium and cobalt with values as high as 1.9% Ni, 7% Cu, 4.33 g/t PGE (*sic*) and 2.4 pounds per ton Co. Drilling carried out by East West Resource Corporation in 2002 extended the original zone to a 225 m depth from the 100 m elevation thereby doubling the depth extent. The original deposit was 200 m in length and in the form of 2 thickened lenses. The presence of a third lens, 100 m long, would increase the strike length of the deposit by 33% (ibid.). The Norton property was subsequently optioned to **Cascadia International Resources Inc.** (News Release, East West Resource Corporation, October 23, 2003). A $150 000 drill program is planned for January to March 2004 to test the down-dip and plunge of the deposit, as well as other EM conductors that have been outlined by previous INPUT EM surveys and a helicopter-borne EM survey flown by East West in February 2003. Magnetic surveys and geological mapping completed in September 2003 have located other favourable pyroxenite host rocks extending eastward from the Norton Deposit. Outcrops and old drill holes have also located pyroxenite near several EM conductors on the eastern part of the property near a large fold nose. Work by East West has confirmed that the Norton deposit continues to depth beyond 225 m and that the east end of the deposit plunges steeply eastward. Three holes completed in September have confirmed the east margin of the lens with narrow sulphide intersections along the upper edge of the plunge line (ibid.). A 572 km, helicopter-borne, time-domain EM (VTEM) survey was designed to cover the eastern half of the Norton project in an area known to contain pyroxenite bodies (News Release, East West Resource Corporation, January 12, 2004). The winter program planned to involve follow-up drilling to test the targets that would be consistent with massive sulphide responses adjacent to, or within, pyroxenite host rocks (ibid.).

East West Resource Corporation also entered into a joint-venture option agreement with Cascadia International Resources Inc. whereby Cascadia optioned the Linsey Bay property, 100 km north of Armstrong (News Release, East West Resource Corporation, October 21, 2003). A time-domain EM (VTEM) survey flown for East West located several massive sulphide-type conductors that form discrete lenses 400 to 600 m long and are located near and along strike from a known copper-nickel intersection beneath a sulphide occurrence. North of Luella Lake, a 31.1 m interval of disseminated sulphides containing massive sulphide lenses, drilled by Getty Mines Ltd. in 1974, returned 1.29% Ni , 3.2% Cu over 2.0 m and 0.83% Ni, 1.4% Cu over 1.5 m in an altered gabbro-pyroxenite. No assaying had been done for PGE values. Under the terms of the option agreement, Cascadia will spend a minimum of $100 000 drilling in early 2004 (ibid.). A diamond drilling program to test a minimum of 6 strong EM conductors was announced in January 2004 (News Release, East West Resource Corporation, January 22, 2004). The holes are designed to intersect the 6 pod-shaped massive sulphide targets that vary in strike length between 200 and 400 m. Several conductors were chosen for drilling. One exceptional conductor 400 m long with a 200 m long pod-shaped section and a 200 m thinner "tail" will also be tested in an area known to contain basalt and rhyolite with sericite-anthophyllite-garnet (volcanogenic massive sulphide-style) alteration (ibid.).

Aurora Platinum Corporation explored a "reef-type", layered mafic-ultramafic complex, 30 km north of Lansdowne House (Neskantaga FN) in the Sachigo Subprovince. A 3000 m winter drill program was designed to test the platinum-palladium-rich reef discovered in 2002 by the company (News Release, Aurora Platinum Corporation, February 13, 2003). The reef-style mineralization is associated with a distinct, layered, coarse-grained, plagioclase-rich, cumulate phase of the Lansdowne layered complex located near the ultramafic interface. Previous drilling by Aurora intersected 13.5 m of 1.4 g/t Pt+Pd, including 3.2 g/t Pt+Pd. The PGM reef forms a distinctive magmatic layer within the 20 km long by 10 km wide complex. Airborne electromagnetic surveys and detailed ground geophysical surveys have traced the reef horizon for approximately 5 km along the southeastern part of the complex. The 2003 drilling was focused on delineating the LH-01-20 reef. The last drill program carried out by the company confirmed the layered nature of the complex, and the potential to discover this same PGM rich reef elsewhere on the property is considered to be high (ibid.). Field work was suspended in June 2003 pending resolution of issues with Neskantaga First Nation.

Spruce Ridge Resources Ltd. carried out mapping and sampling on the Final Lake property, 20 km northeast of Jellicoe. Many geophysical targets have been tested, resulting in the discovery of mineralized zones exhibiting stringers of massive chalcopyrite and pyrrhotite in mafic intrusive rocks (Resident Geologist's Files, Thunder Bay North District, Thunder Bay).

East West Resource Corporation and **Maple Minerals Corp.** were informed by **Kennecott Canada Exploration Inc.** that the option on the Eva–Kitto project near Beardmore was terminated late in 2003 (News Release, East West Resource Corporation, November 21, 2003). The host rocks are mafic to ultramafic, Mesoproterozoic, intrusive rocks associated with the Nipigon Plate. Kennecott had completed a detailed MEGATEM electromagnetic (EM) and magnetic survey and completed 4 drill holes in 2003. The first 2 holes located a disseminated sulphide zone with anomalous nickel-copper-PGE values (with the highest being 0.563 g/t Pt+Pd; 0.139% Cu; 0.228% Ni) in the vicinity of a surface showing having highly anomalous nickel-platinum-palladium values (0.440 g/t Pt+Pd; 0.1335% Ni) (Hart et al. 2002). Two other holes completed in July were drilled roughly 1 mile south of the first 2 holes and did not intersect the same sulphide horizon, but instead intersected Sibley Group sedimentary rocks. East West and Maple plan to continue to explore the 6 km wide ultramafic complex for the extension of the platinum- and sulphide-bearing layer (ibid.).

Canden Capital Corp. (formerly **Superior Canadian Resources Inc.**) conducted preliminary field work on their Sim Lake property, south of Fort Hope (News Release, Canden Capital Corp., October 10, 2003). A mineralized occurrence on adjacent claims in layered mafic and gabbroic rocks has reported values up to 1.95% Ni, 1.715% Cu, and 1.3 g/t Pt+Pd. A helicopter-based magnetic and time-domain electromagnetic (TEM) survey was flown in order to identify and qualify areas for more detailed follow-up surveys and drilling. Preliminary results indicate a significant number of TEM anomalies. Drilling on the property was anticipated to commence in late winter of 2004 (ibid.).

Landore Resources Inc. announced a 700 m diamond drill campaign on their B4-7 prospect on their Junior Lake property, east of Armstrong in early November 2003 to test the up-dip and strike continuity of the nickel-copper-palladium-platinum-mineralized zone (News Release, Landore Resources Inc, October 20, 2003). Previously reported drill hole intersections included grades of up to 11 061 ppb Pd and 3600 ppb Pt in sheared ultramafic rocks on the northern flank of the massive sulphide B4-7 zone. Further drilling will be targeted after the completion of a low-level airborne geophysical survey scheduled for early in 2004. The B4-7 massive sulphide zone has previously been reported, by International Mogul Mines and North Coldstream Mines in 1969, as containing a resource of 2.28 million tons at 0.87% Ni and 0.59% Cu. Re-assaying of the diamond core and confirmation drilling by Landore in 2001–2002 established the presence of significant palladium, platinum and cobalt credits (ibid.).

Northern Shield Resources Inc. announced positive indicators for platinum group element mineralization on its 100 percent-owned Highbank Lake property, east-northeast of Neskantaga First Nation (News Release, Northern Shield Resources Inc., October 30, 2003). Recently completed airborne magnetic, induced polarization (IP) and stream and soil MMI (Mobile Metal Ion) surveys support the potential for the area to host significant magmatic PGE-bearing sulphide-chromitite layers or "reefs." An earlier News Release (September 4, 2003) announced the discovery of chromite grains and chromitite fragments in a heavy mineral sampling survey. The Highbank Lake property represents a potential mafic-ultramafic layered intrusion related to the Fishtrap Lake intrusive complex. As a result of these findings, Northern Shield is planning an intensive follow-up program for current anomalies, consisting of detailed geochemical and geophysical surveys, as well as additional regional exploration to identify the full extent of potential mineralized horizons. The surveys will be designed to allow for a drilling program during the winter (ibid.).

Diamonds

Superior Diamonds Inc. conducted a summer exploration program on 7 priority target areas within the 33 000 km^2 area of the AEM Diamond Project, located in the northern parts of the Thunder Bay North, Timmins and Red Lake districts (News Release, Superior Diamonds Inc., June 12, 2003). Results from previous exploration by the company have defined several key target areas based on kimberlite indicator mineral (KIM) chemistries and airborne magnetic geophysical signatures. The AEM project is targeting similar structural environments to those hosting the Attawapiskat diamondiferous kimberlite cluster which is presently undergoing a full feasibility study by De Beers Canada Exploration Inc. Interpretation of the company's airborne magnetic data by independent geophysicists recognized important clusters of circular magnetic anomalies associated with down-ice concentrations of kimberlite indicator minerals in glacial till. Some of the indicator minerals exhibit chemistries consistent with a potentially diamondiferous source. The 2003 summer program was designed to evaluate 7 target areas by grid

sampling of basal till to recover a larger population of kimberlite indicator minerals. The sampling will be concentrated around and down-ice of clusters of magnetic circular anomalies. Ground magnetic surveys were utilized to accurately position circular anomalies. It was anticipated that once the program was completed, priority drill targets would be defined and ready for testing in the fall and winter, 2003–2004 (ibid.). Superior Diamonds Inc. and **Canabrava Diamond Corporation** announced the acquisition by Superior Diamonds of all of the issued shares of Canabrava by way of plan of arrangement and has been approved by shareholders of each company and by the court (News Release, Superior Diamonds Inc. November 27, 2003). As a result of the acquisition, Superior Diamonds will have a larger market capitalization and a more diverse portfolio of diamond exploration properties (ibid.).

Volcanogenic Massive Sulphide (VMS)

Noranda Inc. optioned and carried out a drilling program on **East West Resource Corporation**'s Havoc property, located 35 km south of Armstrong, in late 2003 (News Releases, East West Resource Corporation, October 30 and November 24, 2003, respectively). Three EM conductors occurring in felsic metavolcanic rocks were slated to be tested. Positive correlation of copper and zinc soil geochemical anomalies were found with 2 conductors, suggesting the presence of a VMS zone. Strong conductivity indicated the possibility of massive sulphides (ibid.). Soil samples taken on the grid over the EM conductors analyzed by Noranda were found to have a positive copper-zinc correlation with levels comparable to other geochemical case histories over known copper-zinc deposits. Max-Min EM surveys helped to accurately locate the airborne EM conductors. This information, coupled with lithogeochemical studies done earlier by East West on 2 widely spaced drill holes, suggested the presence of a VMS environment. Felsic volcanic rocks with sodium depletion and anomalous amounts of copper and zinc confirm this geological setting (News Release, East West Resource Corporation, October 30, 2003).

S. Roach completed a limited program of mechanized trenching, stripping, detailed mapping and channel sampling on his Wobbegong property in the Metcalfe Lake area, north of Onaman Lake. VMS-style alteration, including zones of sodium depletion, was identified in a whole-rock sampling program (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). The property was optioned to Kodiak Exploration Limited in late 2003, as part of their large property in Oboshkegan Township (ibid.).

Tribute Minerals Inc. re-staked their Melchett Lake property, 100 km north of Nakina, in early 2003 (G. Davison, Tribute Minerals Inc., personal communication, 2004). A work program for the summer of 2004 is being planned (ibid.). Several base metal-mineralized zones have previously been identified along a geochemically favourable horizon (News Release, Tribute Minerals Inc., March 07, 2002).

Iron Oxide Copper-Gold

East West Resource Corporation began a 500 m diamond drill program late in 2003 on their Red Granite property, located 20 km south of Armstrong, to test potassium-, uranium- and thorium-anomalous zones that may reflect Olympic Dam-style mineralization (News Release, East West Resource Corporation, December 15, 2003). Locally derived glacial debris containing highly anomalous rare earth, uranium, thorium and zirconium values (News Release, East West Resource Corporation, September 17, 2002) were found on the property by the original prospectors. Subsequently, prospecting by East West identified possible up-ice bedrock sources (News Release, East West Resource Corporation, December 15, 2003). Malachite has been noted in glacial debris and within a flat-lying cap rock that covers some of the basement rocks (ibid.).

Maple Minerals Corp. and **East West Resource Corporation** optioned the Hanna (Bochana) copper-gold property in 2002 at Lang Lake, 90 km west of Pickle Lake. A 23 million t, copper-gold porphyry or Olympic Dam-style deposit had been identified. Previous drilling encountered 500 feet of 0.3% Cu and gold values from surface grab samples ranging from 0.5 to 4 g/t Au (News Release, Maple Minerals Inc., March 12, 2002). Some re-staking and assaying of existing drill core was carried out in 2003 (R. Middleton, East West Resource Corporation, personal communication, 2004).

Table 2. Assessment files received in the Thunder Bay North District in 2003.

Abbreviations

AEM ..... Airborne electromagnetic survey
AM ..... Airborne magnetic survey
ARA ..... Airborne radiometric survey
Beep ..... Beep Mat survey
Bulk ..... Bulk sampling
DD ..... Diamond drilling
DDH ..... Diamond drill hole(s)
DGP ..... Down-hole geophysics
GC ..... Geochemical survey
GEM ..... Ground electromagnetic survey
GL ..... Geological Survey
GM ..... Ground magnetic survey
GRA ..... Ground radiometric survey
Grav ..... Gravity survey
HLEM ..... Horizontal loop electromagnetic survey
HM ..... Heavy mineral sampling
IM ..... Industrial mineral testing and marketing
IP ..... Induced polarization survey
Lc ..... Linecutting
Met ..... Metallurgical testing
OD ..... Overburden drilling
ODH ..... Overburden drill hole(s)
PEM ..... Pulse electromagnetic survey
PGM ..... Platinum group metals
Pr ..... Prospecting
RES ..... Resistivity survey
Samp ..... Sampling (other than bulk)
Seismic ..... Seismic survey
SP ..... Self-potential survey
Str ..... Stripping
Tr ..... Trenching
UG ..... Underground exploration/development
VLEM ..... Vertical loop electromagnetic survey
VLFEM ..... Very low frequency electromagnetic survey

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Akow Lake	Romios Gold Resources Inc.	2003	GC, Samp	2.25944	53B15/SE-001, 53B16/SW-022
Armstrong area	Valerie Gold Resources Ltd.	2002	IP, Lc	2.24536	52I06/SE-001
Armstrong area	Valerie Gold Resources Ltd.	2002	GM, IP, Lc	2.24400	42E09/SE-005
Caramat Lake	Albert, O.	2002	Str, Tr, Samp	2.25656	4E09/SE-005
Crescent Lake	Linear Resources Inc.	2001	GL, Tr, Samp	2.24736	52I08/NW-017
Duffell Lake	Lamoureux, B.	2000	DDH, Samp	2.20788	52O02/NW-002
Duffell Lake	Lamoureux, B.	2000	GM, VLFEM, Lc	2.20787	52O02/NW-001
Duffell Lake	Lamoureux, B.	2001	Tr, Samp	2.23687	52O02/NW-003
Dusten Lake	Ashton Mining of Canada Inc.	2002	GM, DDH, Lc	2.23220	53A12/SW-001
Eva and Kitto townships	Kennecott Canada Exploration Inc.	2002	AEM, AM, GL, Pr, Samp	2.24671	52H09/SE-032a-c
Eyapamikama Lake	Northern Dynasty Minerals Ltd.	2002	Samp	2.24346	53B14/NE-002
Irwin Township	Ontex Resources Ltd.	2001	GL, Str, Samp	2.25220	42E12/NW-189
Irwin Township	Pettit, C.	2002	Str	2.24739	42E12/NW-191
Irwin Township	Ontex Resources Ltd./Metalore Resources Ltd.	2003	Str, Samp	2.26483	42E12/NW-192
Junior Lake	Lithic Resources Ltd.	2003	GM, Lc	2.24766	42L05/NW-028
Kitto Township	Kennecott Canada Exploration Inc.	2003	DDH, Samp	2.25855	52H09/SE-033

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Lafferty Creek	De Beers Canada Exploration Inc.	2002	AM, GC, Samp	2.24649	53A12/NE-001
Lansdowne House	Aurora Platinum Corp.	2001	AEM, AM, GL, DDH	2.23509	42D05/NW-001
Lapierre Lake	Spruce Ridge Resources	2001	GL, Str, Samp	2.24160	42E14/SW-045, 42E14/NW-007
Lapierre Lake	Spruce Ridge Resources Ltd.	2002	GL, GM, VLFEM, Lc	2.25794	42E14/SW-046
Leduc Township	Ontex Resources Ltd./Metalore Resources Ltd.	2002	GL, Samp	2.25258	42E12/NE-178a,b, 42E11/NW-076
Leduc Township	Metalore Resources Ltd.	2003	IP, Lc	2.24970	42E11/NW-075
Legault Township	Cheekley, F.	2002	Str, Tr	2.24707	42E11/NW-074
Maun Lake	Carter, N.	2003	GL, Samp	2.26018	42L07/NW-025
McBean Lake	Liard, R.	2003	GL	2.25719	42E10/NE-050
McComber Township	Skalesky, A.	2003	Pr, Samp	2.25740	42E12/NW-188
McVicar Lake	De Beers Canada Exploration Inc.	2002	GC, Samp	2.24647	52O11/SW-002
McVicar Lake	Prospector Consolidated Resources Inc.	2002	GL, Pr, Samp	2.24983	52O11/SW-001
North Caribou Lake	Romios Gold Resources Inc.	2003	GEM	2.25821	53B16/SW-021
Norton Lake	East West Resource Corp./Canadian Golden Dragon Resources Ltd.	2003	AEM, AM	2.26318	42M14/NW-008, 42M14/NE-003
Norton Lake	East West Resource Corp.	2002	GC, GL, Lc, Samp	2.24537	42M14/NW-006
Norton Lake	East West Resource Corp.	2002	GM, IP, VLFEM	2.24631	42M14/NW-007
Norwood and Pillar lakes	East West Resource Corp.	2002	AM, GC, GL, DDH, Samp	2.24716	52I03/SE-001
Oboshkegan Township	NWT Copper Mines Ltd.	2003	Str, Tr, Samp	2.26303	42L04/NE-113
Oboshkegan Township	Roach, S.	2002	GL, Str, Samp	2.25222	42L04/NE-112
Opapimiskan Lake	Placer Dome (CLA) Limited	2002	DDH, Samp	2.24660	53B09/NW-005
Pillar Lake	Inco Ltd.	1999	Samp	2.22218	52I03/NE-001
Rich Lake	Pure Gold Minerals Inc.	2003	IP, Lc	2.25458	52P09/SE-027
Sim Lake	1236001 Ontario Inc.	2003	GL, Samp	2.25729	52P01/SE-07a,b
Skinner Lake	Placer Dome (CLA) Limited	2002	DDH, Samp	2.25069	53B09/NW-004
Stoughton Lake	Wolfden Resources Inc.	2002	GL, Samp	2.24420	52O12/SE-001

Township or Area	Company Name	Year	Type of Work	AFRO Number	Resident Geologist Office File Designation
Summers Township	Cote, R.	2002	GL, Str	2.24846	42E12/NW-187
Tyrol Lake	Spruce Ridge Resources Ltd.	2001	DDH, Samp	2.25120	42E13/SW-099
Vincent Township	Maki., N.	2002	Pr	2.24980	42E12/NE-182, 42E12/NW-190
Walters Township	Lafontaine, S.	2001	Pr	2.25109	42E13/SE-131, 42E12/NE-179
Walters Township	Ontex Resources Ltd.	2002	DDH, Samp	2.24925	42E12/NE-180a-f
Walters Township	Ontex Resources Ltd.	2002	GM, VLFEM, Lc	2.25030	42E12/NE-181
Walters Township	Pettit, C., Atkinson, R., Clark, C.	2003	Str, Samp	2.26757	42E12/NE-185
Wigwascence Lake	De Beers Canada Exploration Inc.	2002	AEM, AM, GC, Samp	2.25327	53A06/NW-001
Willet Lake	Kukkee, K.	2003	GEM, Lc	2.25383	42L05/SE-044

Table 3. Exploration activity in the Thunder Bay North District in 2003 (keyed to Figures 2, 3 and 4).

Abbreviations

AEM ..... Airborne electromagnetic survey
AM ..... Airborne magnetic survey
ARA ..... Airborne radiometric survey
Beep ..... Beep Mat survey
Bulk ..... Bulk sampling
DD ..... Diamond drilling
DDH ..... Diamond drill hole(s)
DGP ..... Down-hole geophysics
GC ..... Geochemical survey
GEM ..... Ground electromagnetic survey
GL ..... Geological Survey
GM ..... Ground magnetic survey
GRA ..... Ground radiometric survey
Grav ..... Gravity survey
HLEM ..... Horizontal loop electromagnetic survey
HM ..... Heavy mineral sampling
IM ..... Industrial mineral testing and marketing
IP ..... Induced polarization survey
Lc ..... Linecutting
Met ..... Metallurgical testing
OD ..... Overburden drilling
ODH ..... Overburden drill hole(s)
PEM ..... Pulse electromagnetic survey
PGM ..... Platinum group metals
Pr ..... Prospecting
RES ..... Resistivity survey
Samp ..... Sampling (other than bulk)
Seismic ..... Seismic survey
SP ..... Self-potential survey
Str ..... Stripping
Tr ..... Trenching
UG ..... Underground exploration/development
VLEM ..... Vertical loop electromagnetic survey
VLFEM ..... Very low frequency electromagnetic survey

No.	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
1	Ball, L.	Parent Tp.; Gamsby Lake area (Au)	Pr, Samp
2	Buck Lake Ventures Ltd. (Gwyn Lake property)	Vincent and McComber tps. (Au)	Pr, Str, Samp
3	Canden Capital Corp. (Aurum property)	O'Sullivan Lake area (Au)	Pr, Samp, Compilation
4	Canden Capital Corp. (Sim Lake property)	Sim Lake area (Pd, Pt, Cu, Ni)	Pr, GC
5	Candor Ventures Corp. (Miminiska Lake property)	Miminiska Lake area (Au)	GC
6	Canplats Resources Corp. (Geikie property)	Chief Bay area (Pt, Pd, Cu, Ni)	DDH
7	Continuum Resources Ltd.-Prospector Consolidated Resources Inc. (McVicar Lake property)	Cannon Lake area (Au)	GL, Str, Tr, DDH, Samp
8	Cote, R. and Cote, M. (Alfred Lake property)	McQuesten Tp.; Alfred Lake area (Cu, Au)	Pr, Samp
9	Cote, R. and Cote, R. (Angle Lake property)	McComber Tp. (Au)	Pr, Str, Samp
10	Cote, R. and Cote, R. (Archie Lake property)	Summers Tp. (Au)	Geology, Pr, Str, Samp
11	Cote, R. and Cote, R. (Miner Lake property)	Pither Tp. (Au, Cu, Zn)	Pr, Samp
12	Cote, R. (Nortoba property)	Dorothea Tp. (Au)	Pr, Samp
13	East West Resource Corporation-Jubilee Platinum plc (Havoc property)	Havoc Lake area (Pd, Pt, Cu, Ni)	GC, GL
14	East West Resource Corporation-Cascadia International Resources Inc. (Linsey Bay property)	Ficht Lake area (Pd, Pt, Cu, Ni, Co)	AEM
15	East West Resource Corporation-Canadian Golden Dragon Resources Ltd. (Norton Lake property)	Norton Lake area (Pd, Pt, Cu, Ni)	AEM, DD

No.	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
16	East West Resource Corporation-Jubilee Platinum plc (Norwood property)	Norwood Lake area (Pd, Pt, Cu, Ni)	AM, GC, GL, DDH
17	East West Resource Corporation-Jubilee Platinum plc (Pillar property)	Pillar Lake area (Pd, Pt, Cu, Ni)	AM, GC, GL
18	GCP Mining Corp. (Lincoln property)	Gzowski Tp. (Au)	GL, GM, Pr, Str, Tr, Samp
19	Goodman, Herb Jr. (Tyson property)	Dorothea Tp. (Au, Mo)	Pr, Str, Samp
20	Gossan Resources Limited (Gustafson-Eva Township property)	Eva Tp. (Au, Ag)	Samp
21	Greenland, H.	McQuesten & Houck tps. (Au)	Pr, Samp
22	Holt, L. and Nelson, M. (Tashota property)	Willet Lake area (Au)	Pr, Samp
23	Houghton, F. (Mud Lake/ADR property)	Elmhirst Tp. (Au)	Pr, Str, Samp
24	Houghton, F. (Porphyry Hill property)	Meader Tp. (Au)	Pr, Samp
25	International Taurus Resources Inc.-Kodiak Exploration Limited (Lincoln property)	Gzowski Tp. (Au)	GL, Str, DD, Samp
26	Kennecott Canada Exploration Inc.-East West Resource Corporation-Maple Minerals Corp. (Eva-Kitto property)	Eva & Kitto tps. (Pt, Pd, Cu, Ni)	DDH
27	King's Bay Gold Corp. (Pickle Lake project)	Connell Tp. (Au)	GEM, GM, Lc, Compilation
28	Kodiak Exploration Limited (Knucklethumb property)	Oboshkegan Tp. (Au)	Compilation
29	Kodiak Exploration Limited (North Metcalfe property)	Oboshkegan Tp. (Au)	Compilation
30	Kodiak Exploration Limited (Wobbegong property)	Oboshkegan Tp. (Cu, Zn)	Compilation
31	Koivisto, R. – K. Kukkee (Tashota property)	Willet Lake area (Au)	Pr, Samp
32	Lance, C. (Vincent Township property)	Vincent Tp. (Au)	Pr, Samp
33	Landore Resources Inc. (Junior/Lamaune Lake property)	Falcon Lake area (Pd, Pt, Cu, Ni, Au)	AEM, AM, GL, Pr, Str, Tr, Samp, DD
34	Landore Resources Inc. (Miminiska Lake property)	Frond Lake area (Au)	DDH
35	Leo Alarie Construction Company	Thomas Lake (Hillsport) area (Diabase)	Quarry development and production
36	MetalCORP Limited (Pickle Lake properties)	Connell Tp. (Au)	AM, GL, Pr, Str, Tr, Samp
37	Nelson, M. and Cox, N. (Vega property)	Vincent Tp. (Au)	Compilation
38	Nelson, M. and Savage, J. (North Metcalfe property)	Oboshkegan Tp. (Au)	Pr, Str, Tr, Samp
39	Noranda Inc.-Jubilee Platinum plc (Havoc property)	Havoc Lake area (Pd, Pt, Cu, Ni)	DDH
40	Noranda Inc.-Linear Gold Corp. (Kilometre 61 property)	Crescent Lake area (Cu, Au)	Compilation, LC, GC
41	Northern Shield Resources Inc. (Highbank Lake property)	Fishtrap Lake area (Pt, Pd, Cu, Ni, Cr)	AM, GC, HM, IP
42	NWT Copper Mines Limited (Spruce Hull Lake property)	Oboshkegan Tp. (Au)	Str, Tr, Samp
43	Ontex Resources Ltd. (Cherbourg occurrence)	Irwin Tp. (Au)	Str, Samp
44	Pettit, C. (Nora Lake property)	Walters Tp. (Au)	Pr, Str, Samp

No.	Company/Individual (Occurrence Name) or Property	Township/Area (Commodity)	Exploration Activity
45	Pettit, C. (Watson Lake property)	Irwin Tp. (Au)	Pr
46	Pichette, A. (Junior Lake property)	Toronto Lake area (Au, Pt, Pd, Cu, Ni)	GC
47	Placer Dome North America Ltd.-Kinross Gold Corporation (Musselwhite properties)	Zeemel Lake area (Au)	GL, Str, Tr, DD, Samp
48	Roach, S. (Wilkinson Lake property)	Rickaby Tp. (Au)	GL, Str, Tr, Samp
49	Roach, S. (Wobbegong property)	Oboshkegan Tp. (Cu, Zn)	GL, Str, Tr, Samp
50	Romios Gold Resources Inc. (Lundmark-Akow Lake property)	Akow Lake area (Au)	GEM, GM, DD
51	Roxmark Mines Limited (Leitch-Sand River Gold Mine properties)	Eva & Summers tps. (Au)	Compilation
52	Roxmark Mines Limited (Northern Empire Mine)	Summers Tp. (Au)	Compilation
53	Rutherford, E. (Eva-Summers property)	Eva & Summers tps. (Au)	Pr, Str, Samp
54	Slam Exploration Ltd. (Cadman Lake property)	Keezhik Lake area (Au)	Compilation
55	Slam Exploration Ltd. (Keezhik Lake property)	Keezhik Lake area (Au)	Compilation
56	Slam Exploration Ltd.-1533687 Ontario Limited (Miminiska-Keezhik project)	Miminiska & Keezhik lakes areas (Au)	Compilation
57	Slam Exploration Ltd.-Eastmain Resources Inc. (Reserve Creek property)	Veekay Lake area (Au)	Pr, Tr, DDH, Samp, Compilation
58	Spruce Ridge Resources Ltd. (Final Lake property)	Fullerton Lake area (Pd, Pt, Cu, Ni, Au)	GL, Samp
59	Spruce Ridge Resources Ltd. (Hull Lake property)	Oboshkegan Tp. (Au)	GL, Str, Tr, Samp
60	Superior Canadian Resources Inc. (O'Sullivan Lake property)	O'Sullivan Lake area (Au)	Compilation, Pr, Samp
61	Superior Canadian Resources Inc. (Sim Lake property)	Sim Lake area (Pd, Pt, Cu, Ni)	Compilation, Pr, Samp
62	Superior Diamonds Inc. (AEM Diamond project)	*Various areas* (Diamonds)	GM, HM, Pr, Samp, GC
63	Thibault, D. and Smith, B. (Sim Lake-Ogoki properties)	Sim Lake area(Pd, Pt, Cu, Ni)	Pr, Samp
64	TNR Resources Ltd.-Pure Gold Minerals Inc.-Slam Exploration Ltd. (Opikeigen Lake property)	Opikeigen Lake area (Au)	IP
65	Tribute Minerals Corporation (Melchett Lake property)	Stewart Lake area (Cu, Pb, Zn)	Compilation
66	Troon Ventures Ltd. (Fry Lake property)	Fry Lake area (Au)	Pr, Samp

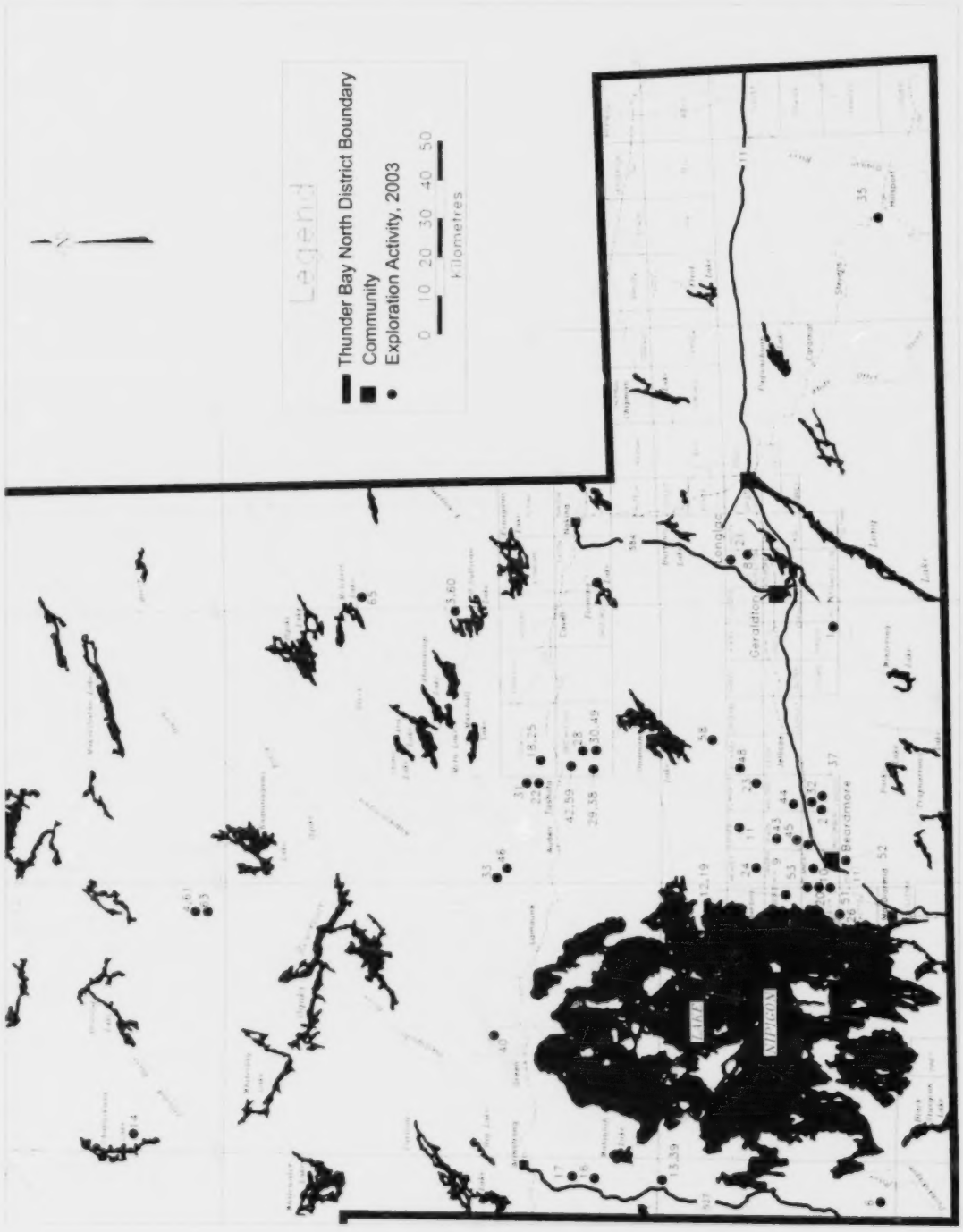

Figure 2. Thunder Bay North District (southeast map) exploration activity, 2003.

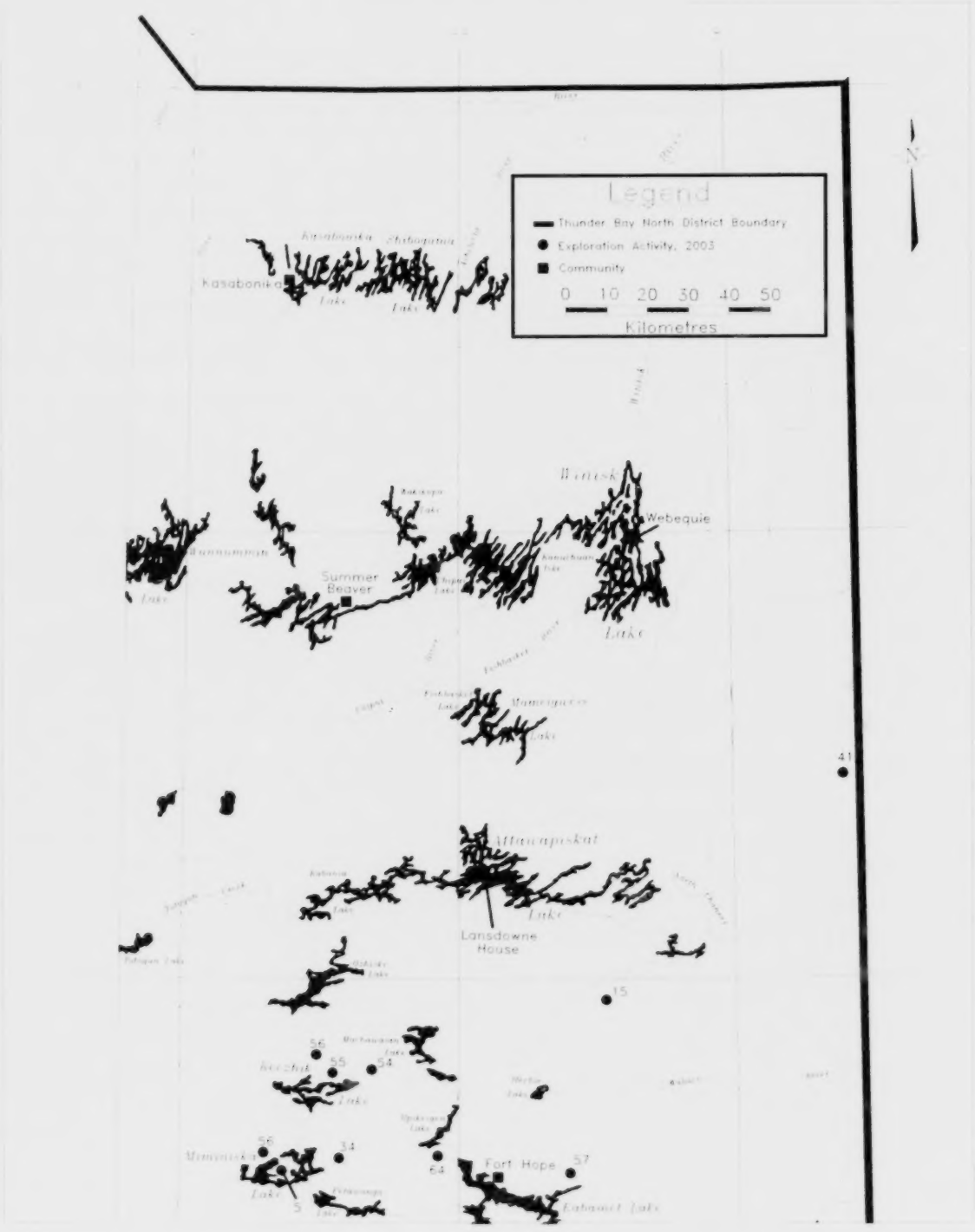

Figure 3. Thunder Bay North District (northeast map) exploration activity, 2003.

Figure 4. Thunder Bay North District (northwest map) exploration activity, 2003.

RESIDENT GEOLOGIST PROGRAM STAFF AND ACTIVITIES

In 2002, the Thunder Bay North Resident Geologist Program (RGP) comprised John Mason, P.Geo. (Co-Manager Northwest and Regional Resident Geologist); Gerry White, P.Geo. (District Geologist); Cyndee Komar (Administrative Assistant) and Michele Tuomi (District Support Geologist). In January 2003, John Mason assumed the position of Manager, Northwest and in April 2003, Mark Smyk, P.Geo., assumed the position of Regional Resident Geologist. Angelique Magee assumed the position of District Support Geologist in December 2003.

Significant support was also provided by Mark O'Brien (Regional Support Geologist) and Annabelle Dowton (Administrative Assistant). Mr. O'Brien's support included map and poster production for regional mines and minerals symposia and Room to Grow – Longlac Wood Industries. Approximately 90 Mineral Deposit Inventory records were revised in the Meen–Dempster portion of the central Uchi Subprovince. Assistance was also provided with Northwestern Ontario Prospectors Association displays at the Thunder Bay Children's Festival. Desiree Wyant filled the Regional Support Geologist position from October to December 2003 while M. O'Brien was on temporary assignment to the Thunder Bay Area Team, Regional Economic Development Branch, Northern Development Division.

Co-ordinated program delivery in the district also involved Abraham Drost, P.Geo. (Regional Land Use Geologist), Peter Moses (First Nations Minerals Information Officer) and Mike Grant (Mineral Development Coordinator, Mineral Development and Lands Branch), especially in dealing with Far North and First Nations issues. A number of presentations (including assisting in the delivery of prospecting courses) were made to First Nation communities in 2003, including Gull Bay FN, Fort Hope (Eabametoong FN), Osnaburgh (Mishkeegogamang FN), Lansdowne House (Neskantaga FN), and Webequie FN.

In 2003, 49 property visits were conducted to 35 properties and Musselwhite Mine (Table 4). RGP staff dealt with 999 visitors and 992 telephone, FAX and e-mail inquiries in the Thunder Bay office, as well as in the Beardmore and Geraldton satellite offices. The Beardmore office, established in 1996 in conjunction with the community of Beardmore, was staffed 1 day per week from May to October. The Geraldton office, co-located in the Northern Development Officer's office, was staffed 1 day per month during the same time period. RGP staff attended the following symposia in 2003: Cordilleran Round-Up, Vancouver (display); Prospectors and Developers Association of Canada Annual Meeting, Toronto (display); Northwestern Ontario Mines and Minerals Symposium, Thunder Bay (presentation and display); Institute on Lake Superior Geology, Iron Mountain, Michigan (presentation and display); Manitoba Mining and Minerals Convention, Winnipeg (display) and the Ontario Exploration Geoscience Symposium, Toronto (presentation and display). M. Smyk also organized a gold short course in Thunder Bay and assisted in the delivery of another in Dryden. He served on the Science Committee for the Lake Nipigon Region Geoscience Initiative and as Treasurer of the Thunder Bay Branch, Canadian Institute of Mining and Metallurgy. G. White continued in his position as Health and Safety Coordinator for the Thunder Bay Mines and Minerals office.

RGP staff initiated an outcrop stripping program that was undertaken by the Municipality of Greenstone adjacent to the MacLeod–Cockshutt headframe in Geraldton. Staff will continue to provide geological and other archival information about the area to the Municipality for their interpretive trail system and nearby visitor center. M. Smyk also contacted the Department of Earth and Planetary Sciences at the American Museum of Natural History in New York, where a rock sample from Geraldton is now on display in the *Hall of Planet Earth*, a display chronicling Earth's evolution. This display information was also provided to the Municipality.

Table 4. Property visits conducted in the Thunder Bay North District in 2003.

Number	Property/Occurrence
1	Archie Lake occurrences (R. Cote): Au
2	Aurum O'Sullivan Lake property (Camden Capital Corp.): Au
3	Black Sturgeon Lake area
4	Central Patricia Mine property (Denroy Manufacturing Corp.): Au
5	Church Lake area
6	Dona Lake Mine property (Placer Dome Inc.): Au
7	Eva Creek
8	Greenland (McQuesten–Houck properties) (Au)
9	Greta Lake Granite area: Stone
10	Gustafson–Eva Township property (Gossan Resources Limited): Au, Ag
11	Junior–Lamaune Lakes property (Landore Resources Inc.)[R]: Au
12	Kilometre 52 Kinghorn Road: Au
13	Kitto Township Diabase Sill Complex: Diabase
14	Knucklethumb Lake property (Kodiak Explorations, Ltd.): Au
15	Leitch Gold Mine property (Roxmark Mines Limited): Au
16	Long Lac Superior
17	MacLeod–Cockshutt/Hardrock Mine (Barrick Gold Corporation)[FT]: Au
18	Mattice Lake–Chimney Lake Area
19	McLellan prospect (Roxmark Mines Limited): Au
20	Metcalfe property (MetalCORP Limited)[PE]: Au
21	Missing Link Extension property (M. Nelson)[FT]: Au
22	Missing Link property (N. Cox)[FT]: Au
23	Mud Lake property (F. Houghton): Au
24	Musselwhite Mine (Placer Dome North America Ltd.–Kinross Gold Corporation): Au
25	Northwest Metcalfe Lake property (Kodiak Exploration Limited): Au
26	Nortoba property (R. Cote): Au
27	Pickle Crow Mine (Cantera Mining Limited): Au
28	Poplar Lodge
29	Sand River Gold Mine property (Roxmark Mines Limited): Au
30	Spruce Hull Lake property (Spruce Ridge Resources Ltd.)[PE]: Au
31	Thierry Mine property (PGM Ventures Corporation): Pt, Pd, Cu, Ni
32	Vooges Lake area
33	Warneford Diabase Quarry: Ballast
34	Wenzoski-Nora Lake property (C. Pettit)[PE]: Au
35	Wilkinson Lake property (S. Roach): Au
36	Wobbegone property (S. Roach): Cu, Zn
37	Wottam Lake property (Landore Resources Ltd.): Au

[R] *described in "RECOMMENDATIONS FOR EXPLORATION", this report*

[PE] *described in "PROPERTY EXAMINATIONS", this report*

[FT] *visited during field trip conducted by Resident Geologist's staff in 2003*

PROPERTY EXAMINATIONS

Metcalfe Property, Pickle Lake (Metalcorp Limited)

The Metcalfe gold property is situated approximately 12 km northeast of Pickle Lake. It is one of 3 properties acquired in 2003 by MetalCORP Limited; it is bracketed by their Connell property to the southwest and their Tarp Lake property to the northeast (News Release, MetalCORP Limited, March 04, 2003).

The area is underlain by northeast-trending supracrustal rocks of the Pickle Lake greenstone belt (Hurst 1931; Stott 1986; Stott et al. 1989; Young and Helmstaedt 2001). Mafic metavolcanic rocks predominate in an area characterized largely by moderate deformation and steep, northeasterly plunging lineations (Domain 1 of Stott 1986; Stott and Brown 1986; Stott et al. 1989). Discrete shear zones have also been noted (ibid.). Narrow-banded iron formation units serve as stratigraphic and structural markers and have been widely considered to be the most prospective and favourable host rocks for gold mineralization in the camp. The past-producing Pickle Crow (1.45 million ounces) and the Central Patricia (635 000 ounces) gold mines lie 6 km south and 10 km southwest of the Metcalfe property, respectively. Much of the area is overburden covered.

Exploration activity on the property dates back to the original Pickle Lake–Crow River staking rush of 1928–1929, at which time the Central Patricia and Pickle Crow deposits were discovered. Prospector T. Metcalfe staked the original vein showings in 1929 (Johnston 1947). The trenched and stripped veins were mapped and described by Ontario Department of Mines in 1930 (Hurst 1931):

> The deposit consists of several narrow quartz veins occupying parallel fractures in greenstone at or near its contact with a diorite dike. The veins strike N.25°E. (mag.) and at one point extend into the diorite dike. One vein has been traced at intervals for about 300 feet and in that distance it ranges from a fraction of an inch to 8 inches in width. The vein filling consists chiefly of white quartz with occasional included fragments of chlorite schist from the walls. Pyrite is fairly abundant in the wall rock and occurs sparingly with chalcopyrite in the veins. It is reported that visible gold has been found in some of the veins. In places the chloritic schist in or near the veins has been recrystallized to form actinolite or garnet. The presence of a narrow dike of granite near the showing suggests that the deposit is not far distant from the main granite-greenstone contact to the north.

Norpick Gold Mines Ltd. drilled the Metcalfe and neighbouring occurrences in 1946, extending the strike length of the vein system to 1700 feet and reporting visible gold in 13 of the drill holes (Johnston 1947). Follow-up work was conducted by Norpax Nickel Mines Limited (1958); Dora Exploration (1977–1982); Kerr–Addison / Minnova Inc. (1987–1989); Hughes–Lang Group (1990); and Homestake Canada Ltd. (1990–1992). This work led to the discovery and delineation of 3 additional mineralized zones: West Quartz Vein zone; Carbonate zone; and the Camp zone (Potts 1992).

MetalCORP Limited staked their Pickle Lake properties and began their current exploration program in June 2003 (News Release, MetalCORP Limited, June 10, 2003). In addition to preliminary prospecting and ground truthing of known showings, an extensive overburden stripping program was initiated to better expose these showings and locate extensions and/or parallel mineralized zones. Although staff of the Resident Geologist Program visited the property before all the stripping work was completed, many of the known zones were visited and sampled. A trail extending northeasterly from the North Road (extension of Highway 599) provides access to all the zones.

The Metcalfe zone (UTM Zone 15, ca. 5716200 northing, 288200 easting, NAD 83) hosts a number of old pits and trenches developed along northeast-striking, steeply northerly-dipping quartz veins in massive mafic metavolcanic rocks. Where exposed, white to locally rusty quartz ± calcite veins average 10 to 15 cm in thickness and are mineralized with small amounts of disseminated to "wispy" pyrite. Pyrite may also be developed at the wall rock contacts. Chloritic septa suggest a "crack-seal" texture in some of the veins. Although some of the collected grab samples returned gold values below the detection limit, 2 grab samples taken from pyrite-bearing quartz veins returned values of 0.39 and 0.13 ounce Au per ton (Resident Geologist's Files, Thunder Bay North District, Thunder Bay).

MetalCORP trenching and sampling confirmed the presence of 4 narrow, gold-bearing quartz veins hosted in strongly carbonatized, mafic volcanic rocks and spatially associated with quartz-feldspar porphyries (News Release, MetalCORP Limited, September 25, 2003). Visible gold was commonly seen in the grab samples. Sampling yielded high-grade gold assays from grab samples up to 2232.92 g/t in quartz veins. The following, significant grab and channel samples were taken from the Metcalfe vein over a strike length of 150 m:

Sample #	Type (width)	Au (g/t)
215095	Grab	16.42
215096	Grab	160.43
215097	Grab	1912.30
215098	Grab	12.47
215099	Grab	29.15
215103	Grab	346.41
215220	Channel (10 cm)	7.93
215234	Channel (20 cm)	10.50
215236	Channel (15 cm)	5.01
215255	Channel (10 cm)	107.47
215268	Channel (10 cm)	8.57
215269	Channel (10 cm)	24.53
215270	Channel (12 cm)	5.72
215276	Channel (10 cm)	10.04
215369	Channel (10 cm)	28.27

A new gold zone (Seven zone), which contained 2 narrow veins, was discovered approximately 200 m north of the Metcalfe vein. Vein 1 yielded 34.15 g/t Au in a 12 cm channel sample and Vein 2 yielded 21.56 g/t Au in a 10 cm channel sample. The veins are 5 m apart and hosted in strongly carbonatized, mafic metavolcanic rocks (ibid.).

Other zones, most of which were visited and sampled by the senior author, returned gold assays below detection limit. They are summarized below by Potts (1992):

Zone	Description	Significant Historical Assays
West Quartz Vein	extensional quartz "leader" vein + minor, ptygmatically folded veins with chalcopyrite, pyrite, hematite	4.90 g/t Au (grab); 0.65 g/t Au over 1.0 m channel
Camp	sheared, weakly ankerite-altered mafic metavolcanic rocks	0.20 g/t Au over 0.80 m channel
Spring	sheared, carbonatized mafic meta-volcanic rocks with disseminated pyrite	drill intersection of 1.51 g/t Au over 1.22 m
Carbonate *(not visited)*	intensely ankerite-altered mafic metavolcanic rocks ± pyrite, arsenopyrite	5.01 g/t Au over 1.0 m channel

The occurrence of sericitized, carbonatized, pyrite- and quartz vein-bearing, quartz-feldspar porphyry on the trail east of the West Quartz Vein zone suggests other possible targets for mineralization. As noted by Johnston (1958), earlier drilling on the property had returned significant gold values in porphyry, and he considered the porphyries to "be the source of *all* the gold values" in the Metcalfe area. Johnston (1958) further suggested the existence of a gold-bearing "break" in the quartz porphyry and recommended testing the intersection between the porphyry dike and the Metcalfe vein. As noted by Stott and Brown (1986), zones of intensely developed schistosity can occur adjacent to, or within, contact zones between rocks of contrasting competency. These shear zones should be targeted by exploration, especially where structural and/or chemical traps (e.g., banded iron formation) are present (Stott and Brown 1986).

Despite erratic gold values reported by previous workers and more recent sampling, the variety and widespread nature of gold mineralization on the property is encouraging. The ubiquity of shearing, fracturing and alteration suggests that the area is prospective for gold. MetalCORP also contracted a detailed, low-altitude, airborne magnetic survey on their Pickle Lake properties (News Release, MetalCORP Limited, October 23, 2003). The survey data will be used to better delineate stratigraphic units and property-scale structures. The interpretation of these data, combined with further surface work and drilling, may generate numerous gold targets in this highly prospective area. The utility of such geophysical surveys, as well as mechanical stripping, cannot be overstated in an area such as this where outcrop exposures are scarce.

Spruce Hull Lake Property (Spruce Ridge Resources Ltd. / NWT Copper Mines Ltd.)

The Spruce Hull Lake property (formerly known as the Hull Lake property) is situated within the north-central portion of the Onaman–Tashota metavolcanic belt (Amukun 1977; Stott and Parker 1996), approximately 66 km northeast of Beardmore and 6 km south of the Canadian National Railway main line. The property, situated in the west-central portion of Oboshkegan Township, is accessed via the Kinghorn Road, which intersects Highway 11 at a point 7.5 km east of Jellicoe. At the 86 km marker of the Kinghorn Road, a secondary bush road extends south for approximately 2 km to the property access trail. A 1 km backhoe access trail leads to the main occurrence.

In 2003, NWT Copper Mines Ltd. continued a program of stripping, trenching and channel sampling in a successful attempt to expand the known area of gold mineralization at the main occurrence (Mason et al. 2003). Spruce Ridge Resources Ltd. subsequently acquired an option to earn 100% interest in the Spruce Hull Lake property from NWT Copper Mines Ltd. (Spruce Ridge Resources Ltd., Press Release, December 24, 2003) and have focussed on expanding the original stripped area. A concentrated program of mapping and channel sampling was initiated during the latter part of the 2003 field season. The property, at the time of writing, comprises 10 staked claims (TB 1233805, 1233864, 1233889 to 1233894, 1245402 and TB 3011465), representing 63 units, covering an area of 1008 ha east and west of Hull Lake. The majority of exploration activity completed to date has focussed on the southwestern portion of claim TB 1245402.

Spruce Ridge Resources Ltd. has expanded the stripped zone from its initial area of 2250 m² to approximately 6000 m², resulting in a bedrock exposure that extends a maximum of 200 m from north to south and 125 m from east to west. A detailed description of the geology, including 6 mineralized zones and sample results within the stripped area, was provided in a press release (Spruce Ridge Resources Ltd., January 08, 2004):

> The stripping exposed a series of mafic to intermediate and possibly felsic volcanic rocks whose dip varies from horizontal to vertical and which appear to be folded on northwest-trending axes. The volcanic rocks are intruded by dykes and plugs of quartz-feldspar porphyry. Almost all the rocks exposed have been affected by hydrothermal alteration which includes sericitization, chloritization and pervasive silicification. Discrete quartz veins are present in some areas. A number of irregular and poorly defined zones of sulphide mineralization, with disseminated pyrite and sometimes pyrrhotite, have been outlined. They are referred to, from southwest to northeast, as the Nick, South, Central, Moose, Spring and East zones. The sulphide zones are not contained within specific structures and their orientations are difficult to determine. They appear to have a generally northwest strike but their dips are unknown. Widths of the individual sulphide zones range up to 9 m and average approximately 3 to 5 metres.
>
> The sulphide zones carry gold values that vary from a trace to a maximum of 8.24 g/t Au (over 0.30 m in a Spring Zone channel sample). The following is a statistical summary of assay results from 258 grab and channel samples, of which 39 were collected by, or in the presence of the Regional Geologist [*sic*] of the Ministry of Northern Development and Mines, 37 were collected by N.W.T. Copper Mines Ltd., and 182 were collect by Spruce Ridge. All were fire assays performed on 30 gram splits by Accurassay Laboratories Ltd. or Swastika Laboratories Ltd. [and Geoscience Laboratories, MNDM, in Sudbury].

Range of gold values	No. of Samples
≤0.25 g/t Au	150
0.26 to 0.50 g/t Au	36
0.51 to 1.00 g/t Au	37
1.01 to 2.00 g/t Au	19
2.01 to 3.00 g/t Au	9
3.01 to 8.24 g/t Au	7
Total	258

The best defined mineralized zone is the Spring Zone, which is marked by intense silicification, giving the rock a pale grey colour which allows the zone to be mapped. It is exposed over a length of 28 m with widths (as measured on surface) up to 7 m. At the northwest end of the Spring Zone, where it disappears under deep overburden, 15 channel samples gave an average of 2.14 g/t Au across a horizontal width of 3.9 m, measured at right angles to the strike of the zone. The true width cannot be estimated because the dip of the zone is unknown.

Spruce Ridge plans a second stage of exploration on the Spruce Hull Lake property, to be carried out in the spring and summer of 2004. It will consist of diamond drilling in the presently stripped area to define the geometry and subsurface extent of some of the mineralized zones located to date, with additional surface exploration on geophysically indicated targets in other areas of the property.

Grab sampling of the Spring zone carried out by staff of the Resident Geologist Office in 2003 returned values up to 6.84 g/t Au (Resident Geologist's Files, Thunder Bay North District, Thunder Bay).

The increase in the price of gold through 2003 focussed attention on the Onaman–Tashota metavolcanic belt, including the immediate areas encompassing the Spruce Hull Lake property. The reader is referred to recommendations made by Mason et al. (2003) and Stott and Parker (1996). Exploration should focus on sheared lithologic contacts, especially those which display quartz-carbonate veins and/or disseminated sulphide mineralization. The majority of the recent staking (>200 claim units) and acquisitions in the Onaman–Tashota belt have been made by Kodiak Exploration Limited, whose Knucklethumb property abuts the Spruce Hull Lake property to the east, south and west. Spruce Ridge and Kodiak, whose collective 2004 expenditures are reported to exceed $1 million, will conduct integrated exploration programs on this highly prospective ground (John Ryan, Spruce Ridge Resources Ltd. and William Chornobay, Kodiak Exploration Limited, personal communications, 2004).

Wenzoski–Nora Lake Occurrence (C. Pettit)

The Wenzoski–Nora Lake property is located within the southwest portion of Walters Township, approximately 14 km due east of Jellicoe. Access to the main gold occurrence is via Highway 11, 20.5 km east of Beardmore and north on an old bush road to an open pit area 370 m south of Nora Lake. The property consists of 3 staked claims (TB 815446, TB 1187662 and TB 1187663; totaling 5 units) and 2 contiguous, leased claims (TB 302466 and TB 302709; 2 units). Work conducted by property owner, C. Pettit of Jellicoe, in 2003 involved prospecting, a power stripping program and detailed sampling. Stripping exposed an area of altered, sheared, mineralized (arsenopyrite and pyrite), quartz-flooded metavolcanic rocks along the north face of a large open cut excavated by E & B Canady Limited in 1981 (Resident Geologist's Files, Thunder Bay North District, Thunder Bay).

Previous exploration activity included stripping, trenching and sampling from 1963–67 by prospector J. Wenzoski, who exposed the original showing. In 1972, R. Halverson drilled 9 short, Winkie holes totaling 93.4 m before transferring the claim to D.C. Clark. The property was subsequently optioned by Conwest Exploration Co. Ltd. and in 1973, a nine-hole diamond drill program totaling 347.8 m, was completed. Assay results as high as 4.02 ounces Au per ton over 0.3 m were obtained in core samples. From 1975–76, D.C. Clark drilled 6 additional short holes, and performed extensive stripping and trenching, all centered on claim TB 302466 over the original discovery. The property was brought to lease in 1980, and optioned to E & B Canady Limited in 1981. In 1982 and 1983, a major stripping program was done by the company and a 16-ton bulk sample was extracted from the main occurrence. The test sample was shipped to the Northern Concentrators Mill in Thunder Bay, where grades averaged from 0.2 to 0.3 ounce Au per ton (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). During this activity, visible gold was observed in both mineralized quartz vein samples and in diamond drill core from the main pit area (C. Pettit, Prospector, personal communication, 2003).

In 1992 and 1996, diamond drill programs were completed under the Ontario Prospector Assistance Program (OPAP) by C. Pettit. Drilling during both these periods was concentrated along the western strike extension of the main vein system, approximately 200 m west of what is known as the main east pit (i.e., the location of the 1983 bulk sample). Anomalous gold values were obtained in sampled sections from all 4 holes, ranging up to 0.18 ounce Au per ton. Grab samples collected by staff of the Thunder Bay North Resident Geologist's Office during a 1992 property visit returned up to 0.411 ounce Au per ton (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). These samples were collected from arsenopyrite-rich, altered metavolcanic host rock adjacent to the vein at the main east pit area. Work conducted by C. Pettit during the 2003 field season consisted of power stripping and sampling over a 38 m long, 11 m wide zone across the north edge of the main east pit. Assay results as high as 167.04 g/t Au were obtained in grab samples from this site (C. Pettit, Prospector, personal communication, 2003).

The Wenzoski–Nora Lake occurrence is located within the west-central portion of the main, east-trending Beardmore–Geraldton metavolcanic-metasedimentary belt, which is part of the southern margin of the Wabigoon Subprovince. Detailed township mapping by Mackasey (1976) indicated that the property lies within a narrow band or wedge of mafic metavolcanic rocks, ranging from 0.5 to 2.0 km wide, that trends across the southern portion of Walters and Leduc townships. Thick sequences of metasedimentary rocks are in fault contact with the metavolcanic unit to the north and south. The main gold-bearing zone, as described by Mackasey (1976), ranges from 12 to 30 cm wide and is represented by a crack-seal-textured, ribbon-banded to brecciated, stockwork quartz-carbonate vein system. Mackasey (1976) stated: "Although veining appears to be related to the same fracture system in the metavolcanics [*sic*], exposure between test pits is not sufficient to determine if the quartz forms one contiguous vein or several *en echelon* veins."

The gold-mineralized, quartz vein system strikes roughly 080°, with a steep southerly dip. It can be traced in old workings for approximately 200 m westward. The metavolcanic host rock in the immediate vicinity of the vein is sheared, grey to buff, carbonatized, sericite- and chlorite-rich. Wall rock mineralization consists of 3 to 10% coarse-grained, disseminated, euhedral arsenopyrite, primarily concentrated along the contacts with the veins. The wall rocks also typically contain up to 3% disseminated pyrite. Lesser amounts (<1%) of chalcopyrite were also noted in some samples (Resident Geologist's Files, Thunder Bay North District, Thunder Bay).

It is important to note that additional stripping and trenching undertaken since Mackasey's (1976) visit has uncovered a blue quartz eye-bearing, quartz-feldspar porphyry dike. The dike, which ranges in size from 3.0 to 4.5 m wide and contains up to 1% finely disseminated pyrite, crosscuts the main quartz vein system at a high angle in the main east pit. This dike can be traced along the general trend of the vein system for approximately 200 m. Grab sample analysis of the dike by both the property owner and staff of the Thunder Bay North Resident Geologist's Office returned anomalous values ranging from 200 to 1000 ppb Au (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). The importance of these dikes and their spatial association with gold mineralization at Geraldton and the Superior Province in general has been noted by numerous workers.

The most recent work undertaken by the property owner in 2003 at the main (eastern) pit is highly significant. Power stripping along a westerly (080°) trend at the northern edge of the pit revealed that the vein system widens and splits into 2 parallel zones, each 3 m wide (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). These zones are hosted by sheared, carbonatized, arsenopyrite- and pyrite-mineralized, mafic metavolcanic host rocks containing rusty, brecciated, quartz-carbonate veining. Sulphide content averages 2 to 3%, but ranges up to 10% in some areas, with coarse arsenopyrite being the main constituent. Twelve grab samples were collected along the newly exposed zone, returning anomalous to high-grade gold values. In the area where the zone splits, assay values ranged from 1.53 to 46.3 g/t Au, with one sample assaying as high as 167.04 g/t Au in the central portion of the north horizon. At the western edge of the stripped area, a 3 m wide exposure of quartz-feldspar porphyry separates the 2 zones (Resident Geologist's Files, Thunder Bay North District, Thunder Bay).

The widening of the Wenzoski–Nora Lake vein system to the west, as exposed in the latest exploration work, was unknown from past work on the property. Only 2 small pits have been excavated along the projected strike extension of the vein system from the main (eastern) pit area westward for approximately 200 m to an old trench known as the Southwest zone. Drilling in this area in 1996 returned values as high as 6.4 g/t Au. A sample collected from a small bedrock exposure at the bottom of the Southwest pit by staff of the Thunder Bay Resident Geologist's Office in 2003 assayed 832 ppb Au (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). A continuation of stripping and sampling west of the main (eastern) pit is recommended. The regional

structure with which the Nora Lake gold occurrence is associated (Watson Lake fault) extends west to the Angle Lake and Archie Lake (Mason et al. 2003) gold properties. This structural corridor is recommended for prospecting and further gold exploration (*see* "Recommendations for Exploration").

RECOMMENDATIONS FOR EXPLORATION

Gold

GOLD IN THE CENTRAL AND EASTERN UCHI SUBPROVINCE

The Uchi Subprovince extends for over 625 km in northwestern Ontario. It hosts the Red Lake gold camp and the past-producing mines at Pickle Lake that have collectively produced more than 25 million ounces of gold. Greenstone belts in the Red Lake, Pickle Lake and Fort Hope areas are situated in the western, central and eastern portions of the Uchi Subprovince, respectively. The latter 2 are the subject of the following recommendations for exploration.

The **Fort Hope area** and its gold occurrences have been favourably compared in lithologic, geochronologic and tectonic setting, not only to the other Uchi gold camps, but also to the nearby Beardmore–Geraldton belt in the eastern Wabigoon Subprovince. Gold mineralization is associated with deformation zones and regional transcurrent faults at or near subprovince boundaries. These structures have produced "belts" of intercalated metavolcanic and clastic metasedimentary rocks. Local gold occurrences have been documented in Ontario Geological Survey, Open File Report 5926, *Mineral Occurrences and Prospects in the Fort Hope–Winisk River Area* (Mason and White 1995). Gold occurrences are hosted by quartz veins; altered and sheared porphyries and associated supracrustal rocks; or sulphidized banded iron formation. Several exploration companies, including Landore Resources Inc., TNR Resources Ltd., Pure Gold Minerals Inc., Slam Exploration Ltd., Eastmain Resources Inc., Deloro Minerals Ltd. and Candor Ventures Corp., are actively investigating the gold potential of the belt.

The geology of the Fort Hope area (Prest 1939, 1944; Thurston and Carter 1970; Wallace 1978, 1981) has been greatly elucidated by the release of airborne geophysical surveys that were flown as part of the Ontario Geological Survey's *Operation Treasure Hunt* and released in 2003, part of which (centred around Miminiska Lake) is shown as a greyscale image in Figure 5.

The shape and internal configuration of previously unsubdivided, felsic plutonic bodies, such as the Cluff Lake pluton (CLP), South Bay stock (SBS) and Troutfly Lake batholith (TLB), can be gleaned from the aeromagnetic image. This has implications, not only for gold mineralization targets, but also for rare metal pegmatites, such as those at Lilypad Lakes, just outside the southern margin of the Cluff Lake stock.

Evidence of folding, re-folding and faulting is revealed, especially where banded iron formations are present. The sharp, east-trending contact between metasedimentary and metavolcanic rocks on the southern part of the Miminiska Peninsula (MP), for example, is evident in the aeromagnetic image, suggesting that a major boundary fault, like that suggested by Prest (1939), may exist. The truncation of a number of east-trending banded iron formation units east of Talbot Lake (TL) may be related to a fault and/or the northeastern contact of the Troutfly Lake batholith (TLB). Many such structures should be evaluated for their gold potential. Re-folded folds are shown west of Eabamet Lake (EL), at Opikeigen Lake (OL) and east of Keezhik Lake (KL), adjacent to the North Caribou–Totogan Lake shear zone (NCTLSZ). This deformation zone is one of a number of southeasterly trending structures that extend into, and transect, the Sachigo Subprovince to the north and commonly coincide with major contacts between greenstone belts and granitoid plutons (Osmani and Stott 1988). In describing gold mineralization along the length of the NCTLSZ, Osmani and Stott (1988) recommended that shear zones that splay and extend off of this regional structure into greenstone belt rocks be investigated for their gold potential. It has been proposed that the NCTLSZ and the Bear Head fault zone, west of Pickle Lake, are major, trans-Superior Province fault zones or "transcrustal megafaults" (Osmani and Stott 1988; Stott and Corfu 1991). These southeast-striking faults, with a dextral sense of displacement, may represent a late Kenoran stage of regional south-southeast-directed shortening (Osmani and Stott

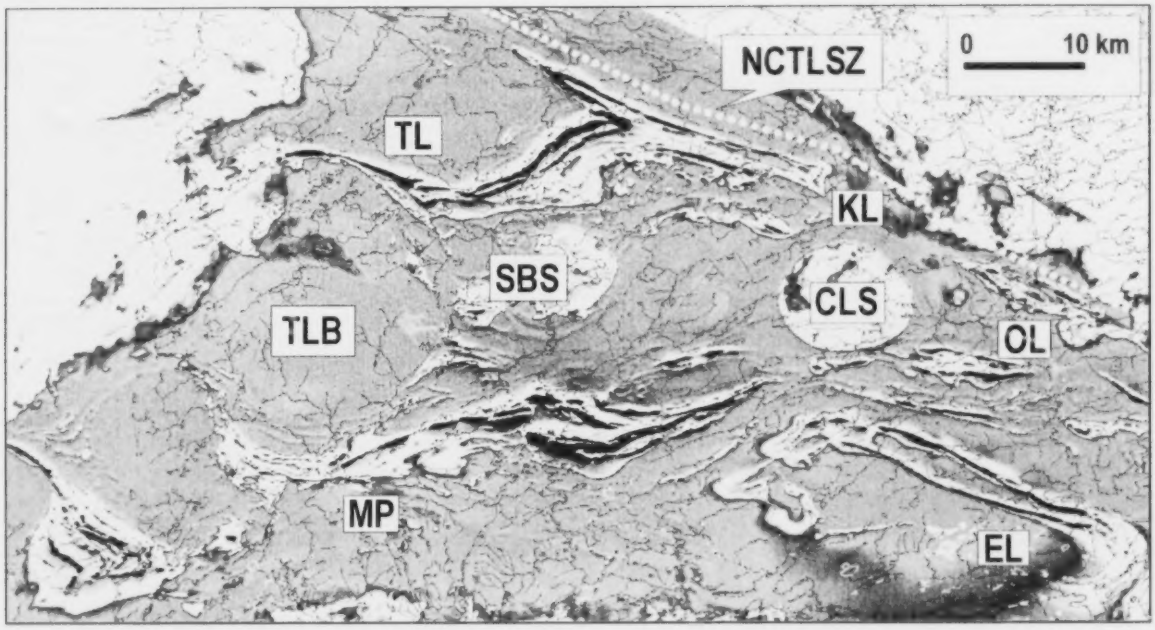

Figure 5. Greyscale image of a portion of the Fort Hope aeromagnetic survey, centered around Miminiska Lake. See text for key to abbreviations used in the figure.

1988; Stott and Corfu 1991). These regional structures and their environs should be investigated for their gold potential, especially in light of the fact that Musselwhite Mine and the past-producing Golden Patricia Mine are situated on the NCTLSZ and the Bear Head fault zone, respectively.

The **Pickle Lake area** has hosted several past-producing mines (Pickle Crow, Central Patricia, Dona Lake, Golden Patricia) which collectively produced over 2 million ounces of gold. In the Pickle Lake and neighbouring Meen–Dempster and Lang Lake greenstone belts, quartz vein- and banded iron formation-hosted gold deposits are located in separate strain domains, related in part to the intrusion of local felsic plutonic rocks. Although companies like King's Bay Gold Corporation, MetalCORP Limited, Continuum Resources Ltd., Prospector Consolidated Resources Inc. and Troon Ventures Ltd. are active in the area, much highly prospective ground remains unstaked. The discovery of additional gold-mineralized zones on the Metcalfe property by MetalCORP Limited (*see* "Property Examinations") emphasizes both the under-explored potential and the need for detailed exploration work, involving overburden stripping. Updating of the table *Mineral Deposits Not Being Mined in the Thunder Bay North District in 2003* (Table 6) has revealed that the Umex–Dorothy Lake deposit (UTM Zone 15, 5697841 northing, 617899 easting) is apparently unstaked. As reported by Seim (1993), preliminary reserve estimates were 236 220 t grading 6.17 g/t Au in sheared and altered diorite and mafic metavolcanic rocks. This should be followed up, as should other occurrences in the area documented in Open File Report 5869, *Mineral Deposits of the Central Portion of the Uchi Subprovince, Volume 1, Meen Lake to Kasagaminiss Lake Portion* (Seim 1993). Areas which have seen gold exploration in the past should be revisited in light of renewed interest. The Webb Lake area, 50 km southeast of Pickle Lake, hosts gold-bearing, sulphidized iron formation and was recommended by Janes and Seim (1996); its volcanogenic massive sulphide base metal potential has never been followed-up.

It is interesting to note that despite the similarity in geology and gold mineralization, perhaps only 10% of the greenstone belts in the central and eastern Uchi Subprovince is currently staked, in marked contrast to those in the western Uchi, centered around Red Lake. Despite relative inaccessibility, the central and eastern portions of the Uchi Subprovince should be re-evaluated for their gold potential.

GOLD TARGETS IN THE BEARDMORE–GERALDTON AREA

Gold exploration is recommended on the central and eastern extensions of the Paint Lake–Burrows River fault, a transcurrent fault associated with gold deposits in the western end of the Beardmore–Geraldton belt. Further detailed prospecting for gold is recommended between Geraldton and the Kinghorn Road, on the Paint Lake–Burrows River fault, and along secondary and tertiary faults and/or lineaments. A parallel regional structure to the south, the Watson Lake fault, also has a number of gold occurrences (e.g., Archie Lake, Angle Lake, Nora Lake) associated with it. This structure may be, in part, related to the formation of the Leitch Mine and neighbouring deposits, serving as an important hydrothermal fluid conduit.

Feldspar porphyry and porphyritic gabbro intrusions should be prospected along fault zones and/or lineaments. Gold is typically associated with pyrite and/or arsenopyrite mineralization, silicification and carbonatization. Sulphide minerals are disseminated or may occur in quartz-sericite-carbonate veins and/or stockwork zones within the intrusions or at contacts with metasedimentary and metavolcanic rocks. Feldspar porphyry sills are commonly late intrusions generated in deformation zones in the vicinity of Geraldton and are associated with pervasive gold mineralization (e.g., Porphyry Hill within the Bankfield–Tombill fault). Examination of all porphyry sills and dikes in Errington and Ashmore townships is recommended. Near-surface, bulk tonnage gold deposits can be associated with the contacts between metasedimentary rocks and porphyries, specifically as quartz-carbonate stockwork vein systems (e.g., F-zone, MacLeod–Cockshutt Mine).

Sulphide-replaced, banded oxide-facies iron formation is associated with gold in Geraldton and eastward to under the Paleozoic James Bay Lowlands. The North Zone gold deposit in Geraldton, mined by MacLeod–Cockshutt Gold Mines Ltd. and Hard Rock Gold Mines Ltd., is the only deposit of this type that was mined in the district. Gold mineralization associated with pyrite and arsenopyrite is hosted in a large Z-fold. Production grades exceeded 0.25 ounce Au per ton. The lateral extent of the Southern Metasedimentary sub-belt iron formation provides a high priority, gold exploration target for dilatant zones created by folding or high-angle faults.

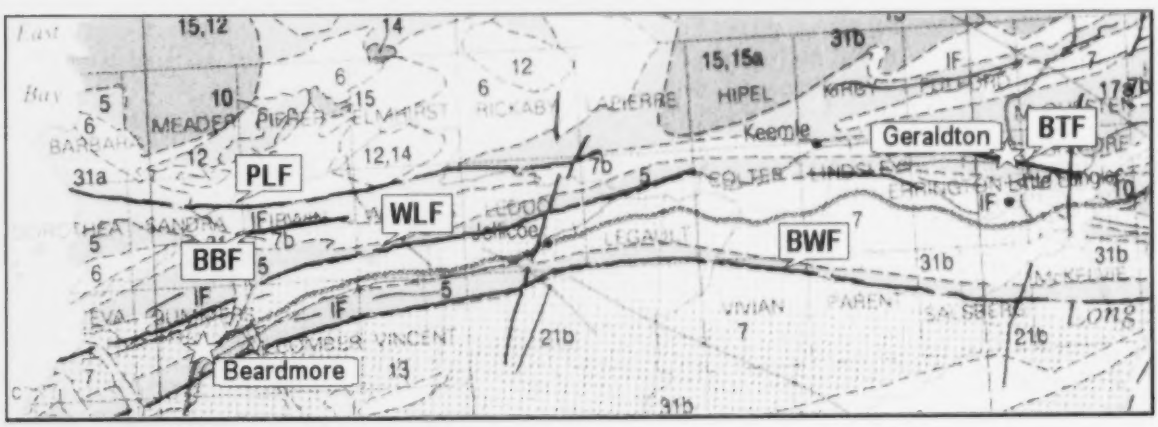

Figure 6: Major faults in the Beardmore–Geraldton belt: PLF – Paint Lake–Burrows River fault; BBF – Brookbank fault; WLF – Watson Lake fault; BWF – Blackwater fault; BTF – Bankfield–Tombill fault.

GOLD IN THE ONAMAN–TASHOTA BELT

The Onaman–Tashota greenstone belt, most recently described by Stott et al. (2002), has experienced a recent resurgence in gold exploration. Much of the exploration will be focused east of Metcalfe Lake. Field work will continue at Spruce Hull Lake (*see* "Property Examinations") and on numerous mineralized zones and occurrences on the Knucklethumb project (e.g., Ryne, Hourglass, Big Bear, Kipper–Cameron occurrences). Staking and exploration have taken place north along the Tashota shear zone, as well (e.g., Adair, Knapp), extending up past the Canadian National Railway at Tashota (e.g., Lincoln property). Based on study of the numerous gold occurrences in the belt, Stott et al. (2002) characterized the association between gold, alteration and structure:

> Iron carbonate-rich hydrothermal alteration is associated with gold-mineralized quartz veins, shearing and fracturing. It is locally associated with sericitic alteration in the Metcalfe–Venus assemblage in western Oboshkegan Township. It is more widespread in interlayered basalt and dacitic tuff of the Willet assemblage west of the Gzowski pluton, where it is also spatially associated with late tectonic, quartz porphyry sills and dykes.

Parker (1995) noted similar features associated with gold mineralization along the margins of the Onaman pluton. A property visit made by staff of the Thunder Bay North Resident Geologist's office in 2003 to the Northwest Metcalfe property, north of Metcalfe Lake, revealed features consistent with this gold mineralization model. Stripping and trenching by the property owners, M. Nelson and J. Savage, in 2003 exposed an area of 50 m long by 25 m wide, underlain by sheared, highly siliceous, sericitized, quartz-eye feldspar porphyry. Gold-bearing sulphide mineralization consists of 1 to 3% disseminated pyrite and/or rusty, discontinuous seams and patches of pyrite (1 to 2 cm wide). Strong chlorite alteration and quartz veining were noted in areas where the shearing was most intense. The mineralized zone appears to strike in a east-northeasterly direction. Grab samples, collected by both the property owners and staff of the Thunder Bay North Resident Geologist's office returned up to 4.01 g/t Au (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). Prospecting and exploration in the belt should focus on lithologic contacts and structures that display evidence of hydrothermal alteration (e.g., sericite, chlorite, iron carbonate, silica) and/or fracturing (e.g., veins, breccia and stockwork zones, dikes). Outcrop stripping is also recommended to enhance exposure and recognition of these features and to facilitate sampling.

Volcanogenic Massive Sulphide (VMS) Deposits

SACHIGO SUBPROVINCE

The discovery of VMS base metal mineralization at McFaulds Lake, 100 km east of Webequie FN, during diamond exploration by De Beers Canada Exploration Inc. in 2002 (News Release, Spider Resources Inc., October 10, 2002) under Paleozoic cover rocks prompted extensive investigation of the base metal potential of the property and suggests that a re-evaluation of the VMS potential of the Sachigo Subprovince is in order.

A review of mineral deposits in the Sachigo and Berens River subprovinces reveals a hitherto profound absence of examples of VMS mineralization in the northwestern Superior Province (Thurston et al. 1991), despite the presence of metavolcanic rocks associated with arc volcanism at ca. 2.7 Ga and ca. 2.8 to 2.9 Ga. A brief study of the mineralized rocks at McFaulds Lake by Franklin (2003) suggested that:

> The McFaulds Lake hydrothermal system is similar in many respects to those in productive VMS districts. The style of alteration and metal contents, along with the style of volcanism is quite similar to the Mattagami Lake camp. This part of the Sachigo Belt [*sic*], although exceptionally poorly known, may contain a typical distribution of VMS deposits; this includes one giant (25 mt) deposit and 3 to 8 smaller (1 to 5 mt) deposits, based on a comparison with other better-known, productive belts. Much more knowledge about the nature of the physical volcanism in the area is needed to refine this estimate."

and that:

> The most prospective greenstone belts for VMS deposits are those which formed in relatively deep water (>1000 m) environments, similar to those in modern back-arcs. As the quality of geological information is poor for much of the Sachigo Belt [*sic*], it is not possible to refine its mineral potential further. As a general guide, two related geological attributes are important. First, the presence of sub-volcanic intrusions, either mafic or felsic, usually is an indication that sufficient heat may have been supplied to the upper 2 km of crust to induce convective hydrothermal flow. Secondly, the presence of felsic volcanic rocks (generally accepted as the products of partial melting of hydrated mafic crust at shallow crustal levels) is another indicator that excessive heat was retained within the crust, again to induce convective flow and metal leaching.

Limited exposure and cursory mapping (Thurston et al. 1979) precludes the easy generation of target areas for VMS exploration. Recent staking in this area has utilized airborne magnetic surveys to outline greenstone belts below Paleozoic and Quaternary cover. More detailed, ground geophysical surveys are used to focus drilling programs. A project designed to interpret Precambrian geology under the Lowlands is being implemented by Stott and Rainsford (2003). This will have implications, not only for VMS exploration, but also for diamond and nickel-copper-PGE exploration.

EASTERN WABIGOON SUBPROVINCE

Felsic metavolcanic terrains in the eastern Wabigoon Subprovince, extending from the Onaman–Tashota belt west to the Crescent–Caribou lakes belt, should be re-examined for volcanogenic massive sulphide (VMS) mineralization. Recently published compilation maps depicting the geology and tectonostratigraphic assemblages in the eastern Wabigoon (Stott et al. 2002) should be used to target prospective areas on the basis of lithology, alteration and mineralization. As noted by Stott et al. (2002):

> The most widespread, synvolcanic, hydrothermal alteration across this belt [Onaman-Tashota] is represented by metamorphic mineral assemblages of chlorite - actinolite and, in more commonly, amphibole ± garnet ± magnetite in the matrix of dacitic autobreccia and hyaloclastites in the Elmhirst–Rickaby assemblage, the Marshall assemblage, and locally in the Metcalfe–Venus assemblage. Metamorphism of altered, aluminous, felsic metavolcanic rocks has resulted in the presence of abundant kyanite in 3 calc-alkalic volcanic centers of different ages: 1) in the upper felsic metavolcanic sequence of the Onaman assemblage, west of Onaman Lake; 2) in the Metcalfe-Venus dacite flows of west Oboshkegan Township; and 3) particularly in the Marshall assemblage, southwest of Marshall Lake in the northern part of the belt. In the latter case, small, volcanogenic massive sulphide deposits accompany widespread, metamorphosed hydrothermal alteration (biotite-feldspar, aluminosilicate-sericite, silica-sericite and amphibole-garnet) (Straub 1999). The aluminosilicate-sericite alteration displays local concentrations of andalusite ± staurolite and rare kyanite. These sulphide mineral deposits are stratiform and most are associated with a silicified tuff horizon. The Onaman assemblage contains a deposit of quartz vein-hosted, copper-zinc-lead-silver sulphide mineralization in the uppermost felsic to intermediate metavolcanic unit, accompanied by widespread synvolcanic hydrothermal alteration that is probably associated with a thick unit of barren, sulphide-facies iron formation (Parker 1995; Osterberg *et al.* 1987). In the Elmhirst–Rickaby assemblage, disseminated and quartz vein-hosted copper ± gold mineralization occurs in the porphyry phases of synvolcanic intrusions.

Recent logging and related road construction east of Armstrong has provided remarkable access and new exposure in an area last mapped by Pye (1968). Intermediate to felsic pyroclastic rocks were noted by Resident Geologist Program staff at the 95 km marker of the main (Jackfish) haulage road, midway between North Lamaune and Juneau lakes (Resident Geologist's Files, Thunder Bay North District, Thunder Bay). They appear to be similar to Pye's (1968, p.9) "rhyolite-inclusion-bearing agglomerate", which he noted at only one location near Funnel Lake, approximately 16 km to the northwest of this new exposure. This garnetiferous, sericitized, gossanous, felsic lapilli tuff / tuff-breccia unit consists of flattened, quartz-phyric, felsic clasts in a more mafic, chloritic matrix. Local folds were evident as well. A whole-rock geochemical analysis (below) suggests possible depletion in sodium and calcium, as well as enrichment of iron and magnesium, typical of VMS-related alteration.

	units	Al_2O_3	CaO	Fe_2O_3	K_2O	LOI	MgO	MnO	Na_2O	P_2O_5	SiO_2	TiO_2	TOTAL
03-MNL-03	wt %	11.12	1.12	10.45	1.02	3.6	4.67	0.15	0.33	0.1	68.38	0.48	101.41

Detailed mapping and re-mapping proposed by the Resident Geologist Program in this area would complete the updating of the eastern Wabigoon geological map. Such mapping would identify and connect felsic pyroclastic and other favourable units that extend west from the Marshall Lake (Straub et al. 2000) and Toronto Lake area (Berger 1992). The immediate area also has a proven potential for gold and copper-nickel-PGE deposits such as the BAM occurrence and B4-7 deposit, respectively, on Landore Resource Inc.'s Junior Lake property.

OGS ACTIVITIES AND RESEARCH BY OTHERS

1) Projects associated with the Lake Nipigon Region Geoscience Initiative (LNRGI) were initiated in 2003 (Rayner et al. 2003). They include:

   - Geological mapping in the south-central (Tom Hart, Precambrian Geoscience Section, OGS) and northern (Carole Anne MacDonald, Precambrian Geoscience Section, OGS) areas of the Nipigon Embayment, respectively, incorporating newly acquired geophysical data (*see* list below) and re-logging of diamond drill core (Hart and MacDonald 2003);

   - Aeromagnetic and gamma ray spectrometry survey over a large area west of Lake Nipigon;

   - Ground-based gravity survey conducted west and south of Lake Nipigon;

- Geochronologic sampling and analysis of key stratigraphic units by Larry Heaman (University of Alberta);
- Surficial geochemical and Quaternary studies of 5 key areas as follow-up to nickel and platinum group element anomalies generated by earlier *Operation Treasure Hunt* lake sediment surveys (Dyer and Barnett 2003);
- Lakehead University research:
    - Sulphide saturation mechanisms in diabasic and gabbroic intrusions in the Nipigon Embayment (Kissin 2003)
    - Combined lithostratigraphic modelling of the Sibley Group and mafic intrusive rocks of the Nipigon Embayment (Metsaranta et al. 2003);
    - Preliminary assessment of sill material within the Nipigon Embayment (Richardson et al. 2003);
    - Petrology and mineral chemistry of the Seagull intrusion (Heggie and Hollings 2003);
- Geographic Information System (GIS) compilation of existing geological and geophysical data, including proprietary, in-kind contributions from industry partners.

2) Henry Halls (University of Toronto) and Greg Stott (Precambrian Geoscience Section, OGS) conducted paleomagnetic studies of mafic dikes in the vicinity of Lake Nipigon (Halls and Stott 2003), in conjunction with ongoing geochronologic studies carried out by Don Davis (Royal Ontario Museum) and Greg Stott (Precambrian Geoscience Section, OGS) (Davis and Stott 2003). These studies were designed to improve the limited understanding of the paleomagnetic and geochronologic signature of the numerous mafic dike swarms in northwestern Ontario. The association between younger kimberlitic intrusions and older dike swarms was also considered, as was identifying potential PGE-bearing target intrusions.

3) Fred Breaks, Julie Selway (both Precambrian Geoscience Section, OGS) and Andy Tindle (The Open University, Milton Keynes, UK) investigated fertile, peraluminous granites and related rare-element pegmatite mineralization in the Barbara–Gathering–Barbaro lakes area, south and southeast of Beardmore (Breaks et al. 2003). The main purpose of the field work was to evaluate various peripheral areas of the Georgia Lake pegmatite field for additional prospective granites and rare-element-mineralized zones. This work led to the discovery of a newly identified pegmatite group at Gathering Lake, as well as the discovery of 17 rare-element mineral occurrences in the Georgia Lake field (Breaks et al. 2003).

4) The Ministry of Northern Development and Mines has also been actively advancing positive relationships with First Nations in Ontario's Far North in order to facilitate improved communications between these communities and mining and exploration companies. Such initiatives were designed to build capacity and understanding among First Nations in the north, in order for them to be more aware of the benefits that can be obtained through increased exploration in their respective areas (Fyon and Churchill 2003; Owsiacki and Gammon 2003;).

5) A number of faculty and student research projects have recently been completed or are in progress at Lakehead University, Thunder Bay:

Faculty Member	Research Topic(s)
Dr. Peter Hollings	English Bay complex; Archean volcanic geochemistry
Dr. Phil Fralick	Precambrian sedimentary sequences (English River–Wabigoon–Quetico–Wawa subprovinces; banded iron formation; Sibley Group)

Student	Thesis Title
Justin Johnson	Geochemistry and mineralization of the Norton Lake deposit, Fort Hope greenstone belt (MSc thesis, in progress)
Mike Maric	Sandstone architecture of the Paleoproterozoic Rove and Virginia Formations, western Lake Superior region (MSc thesis, in progress)
Riku Metsaranta	Paleohydrology of the Mesoproterozoic Lower Sibley Group, Northwestern Ontario (MSc thesis, in progress)
Adam Richardson	Geochemical variation within the Mesoproterozoic Nipigon Diabase (MSc thesis, in progress)
Becky Rogala	The Sibley Group: a lithostratigraphic, geochemical, and paleomagnetic study (MSc 2003)

6) M. Young completed an MSc thesis, entitled "New structural, geochronological, and geochemical constraints on the tectonic assembly of the Archean Pickle Lake greenstone belt, Uchi subprovince, western Superior Province" at Queen's University, Kingston, Ontario.

ACKNOWLEDGEMENTS

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Table 5. Publications received by the Thunder Bay North Resident Geologist's Office in 2003.

Title	Author(s)	Type and Year of Publication
New structural, geochronological, and geochemical constraints on the tectonic assembly of the Archean Pickle Lake greenstone belt, Uchi subprovince, western Superior Province	M. Young	Unpublished MSc thesis, Queen's University (2003)
Archean Nb-enriched basalts in the northern Superior Province	P. Hollings	Lithos, v.64, (2002), p.1-14
Fort Hope area	Ontario Geological Survey (*Operation Treasure Hunt*)	1:50 000 scale maps (2003): Colour-filled contours of residual magnetic field grid, classified EM anomalies, Keating (kimberlite pipe modeling) anomalies and flight path Shaded colour, 2nd vertical derivative magnetic field grid with Keating correlation coefficient (kimberlite pipe modeling) anomalies and flight path Colour-filled contours of time-domain EM decay constant (tau) grid, classified EM anomalies and flight path Colour-filled contours of the apparent conductance grid, classified EM anomalies and flight path
Results of the "Spider 3" regional kimberlite indicator mineral and geochemistry survey carried out in the vicinity of the Upper Attawapiskat and Ekwan Rivers, Northern Ontario	D.C. Crabtree and C.F. Gleeson	Ontario Geological Survey, Open File Report 6097, 127p. (2003)
Satellite image maps, Northwestern Ontario	V.H. Singhroy, P.J. Barnett, P. Assouad, K. Molch and S.J. Leney.	Ontario Geological Survey, Miscellaneous Release—Data 117 (2003)
Preliminary results from the James Bay Lowland Indicator Mineral Sampling Program	D.C Crabtree	Ontario Geological Survey, Open File Report 6108, (2003)
Lake sediment geochemical data from the ignace survey area, northwestern Ontario: Operation Treasure Hunt	J.E. Jackson	Ontario Geological Survey, Miscellaneous Release—Data 118 (2003)
Attawapiskat area	Ontario Geological Survey (*Operation Treasure Hunt*)	1:50 000 scale maps (2003): Residual magnetic field Second vertical derivative of the magnetic field and Keating anomalies
Geology and tectonostratigraphic assemblages, western Wabigoon Subprovince, Ontario	M. Sanborn-Barrie, T. Skulski, J.A. Percival, J.B. Whalen, J.L. Brown, and V. McNicoll	Geological Survey of Canada, Open File 4255 (2002) / Ontario Geological Survey, Preliminary Map P.3446, scale 1:250 000
Geology and tectonostratigraphic assemblages, north-central Wabigoon Subprovince, Ontario	J.A. Percival, J.B. Whalen, K.Y. Tomlinson, V. McNicoll, and G.M. Stott	Geological Survey of Canada, Open File 4270, (2002) / Ontario Geological Survey, Preliminary Map P.3447, scale 1:250 000
Geology and tectonostratigraphic assemblages, south-central Wabigoon Subprovince, Ontario	D. Stone, K.Y. Tomlinson, D.W. Davis, P. Fralick, J. Hallé, J.A. Percival and P. Pufahl	Geological Survey of Canada, Open File 4284, (2002) / Ontario Geological Survey, Preliminary Map P.3448, scale 1:250 000
Geology and tectonostratigraphic assemblages, eastern Wabigoon Subprovince, Ontario	G.M. Stott, D.W. Davis, J.R. Parker, K.J. Straub and K.Y. Tomlinson	Geological Survey of Canada, Open File 4285, (2002) / Ontario Geological Survey, Preliminary Map P.3449, scale 1:250 000
Precambrian Geology, Longlac sheet	G.W. Johns	Ontario Geological Survey, Map 2667, scale 1: 250 000.
U-Pb age and Nd isotopic evidence for Archean terrane development and crustal recycling in the south-central Wabigoon Subprovince, Canada	K.Y. Tomlinson, D.W. Davis, D. Stone and T.R. Hart	Contributions to Mineralogy and Petrology v.144, no. 6, p.684-702, (2003)

Table 6. Mineral deposits not being mined in the Thunder Bay North District in 2003.

Abbreviations

AF.....Assessment Files
CMH.....Canadian Mines Handbook
GR.....Geological Report
MDC.....Mineral Deposit Circular
MDIR.....Mineral Deposit Inventory record
MLS.....Mining Lands, Sudbury
MR.....Mining Recorder
NM.....The Northern Miner
OFR.....Open File Report
PC.....Personal Communication

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References*	Status
Arseno Lake (53B14/NE)	Zn, Pb, Cu, Ag	1 million t @ 8.7% comb. Zn-Pb, 1.5 opt Ag	Northern Dynasty Minerals Ltd. (37.5%) (CMH 2003-2004, p.372)	1988 Annual Report Northern Dynasty Explorations Ltd.	Seeking joint-venture partners for further exploration
Big Trout Lake (53H12/SW)	Pt, Pd, Cr	Not available	Platinex Inc.		
Brookbank (42E12/NW)	Au	1.625 million t @ 7.1 g/t Au indicated	Ontex Resources Ltd. (CMH 2003-2004, p.382)	Ontex News Release (March 26, 2003)	Discussions ongoing
Dobie Zone (52O06/NE)	Au	301 000 t @ 5.5 g/t Au	Commander Resources Ltd.	OFR 5869, p.161-162	Re-staked in 2002
Goss Lake (Frond Lake) (52P09/SW)	Au	346 900 t @ 5.3 g/t Au inferred	Landore Resources Inc. (optioned from Tandem Resources Ltd. and Ayrex Resources Ltd.)	World Wide Website (http://www.landore .com)	2003-2004 ongoing exploration program
Headway Coulee (42L04/SE)	Zn, Ag	250 000 t @ 4.44% Zn, 1.32 opt Ag	N. Cox, M. Holt	OFR 5630, p.41	Diamond drilling and stripping – Big Mac zone 1995. Geophysics 1997.
Howells Lake (52P10/SW)	Au	83 000 t @ 0.07 opt Au (+1.37% Sb) and 660 000 t (+3.1% Sb) with erratic Au values	Barrick Gold Inc.	OFR 5926, p.68	Last active in 1988.
Jacobus (42E13/SE)	Cu, Ni	1 million t @ 0.94% Cu-Ni	N.W.T. Copper Mines Limited (CMH 2003-2004, p.340)	CMH 2003-2004, p.340	Most recent work diamond drilling by SEG in 1993. Deposit open down-plunge.
Juneau Lake (B4-7 Deposit) (42L05/SW)	Ni, Cu, PGE	2.1 million tons @ 0.87% Ni, 0.59% Cu	Landore Resources Inc. (http:// www.landore.com)	World Wide Website (http://www.landore .com)	Diamond drilling 2003
Karl–Zeemel (53B09/SW)	Au	327 000 t @ 4.6 g/t Au [revised figures to be made public in mid-2004]	Placer Dome (CLA) Ltd.	NM Jan. 8, 1996, p.15	Explored by Placer Dome in 2003

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References*	Status
Kasagiminnis Lake (52O08/SW)	Au	2.9 million t @ 5.8 g/t Au	Hanfeng Evergreen Inc. (formerly McVicar Minerals Ltd.) / Millennium Minerals Limited (formerlyAsia Now Resources Ltd.) (McVicar News Release, September 10, 2002)	NM Apr. 18, 1988	Acquired 2002
Key Lake (42E11/NE)	Au	Indicated resource potential of 200 000 oz per 100 vertical metres	Roxmark Mines Limited (CMH 2003-2004, p.436)	CMH 2003-2004, p.436	Exploration last conducted in 1996-1997
Koval–Ohman (52O07/SE)	Au	471 589 t @ 5.81 g/t Au	Barrick Gold Corp.	OFR 5869, p.317	Inactive
Lavoie Lake (43D05/NE)	Cu, Ni	14.6 million t @ 0.58% Cu, 0.37% Ni	Aurora Platinum Corporation (CMH 2003-2004, p.62)	OFR 5926, p.101	Acquired 2002
Lynx Canada (42L04/SE)	Cu, Ag	25 000 t @ 4.0% Cu, 300 000 t @ 2.0% Cu, 1.0 opt Ag	N. Cox, M. Holt	OFR 5630, p.41	Diamond drilling and stripping – Big Mac zone 1995.
Magnet Mine (42E11/NE)	Au	147 916 tons @ 0.45 oz. Au per ton; 747 976 tons @ 0.49 oz. Au per ton above 11th level	Roxmark Mines Limited (CMH 2003-2004, p.436)	CMH 2003-2004, p.436	Advanced exploration in 2001
Marshall Lake (42L05/NE)	Cu, Zn, Ag, Au	2.211 million tons @ 1.22% Cu, 4.2% Zn, 2.45 oz. Ag per ton, 0.012 oz. Au per ton	N.W.T. Copper Mines Limited	CMH 2003-2004, p.340	Diamond drilling 1996–97. Reinterpretation 1997, 2000.
Northern Empire Mine (42E12/SW)	Au	147 916 tons @ 0.45 ounce Au per ton	Roxmark Mines Limited (CMH 2003-2004, p.436)	CMH 2003-2004, p.436	Mill upgraded and re-opened 2001; surface ore processed. Closed in 2002. Planned re-opening 2004.
Norton Lake (42M14/NW)	Ni, Cu	1.0 million t @ 0.72% Ni, 0.56% Cu	East West Resource Corporation / Cascadia International Resources Inc. (CMH 2003-2004, p.170)	OFR 5926, p.136	Geophysics, geochemistry; diamond drilling 2003-2004
Paulpic (42L04/NE)	Au	200 000 t @ 0.231 opt Au	Canada Tungsten Inc.	OFR 5630, p.465	Last active 1987.
Pickle Crow Mine (52O09/SE)	Au	497 077 t @ 0.35 opt Au	Wolfden Resources Inc. (Pickle Crow Gold Mines Limited) (CMH 2003-2004, p.530)	Resident Geologist's Files	Mill construction, ore stockpiling - No 1 and No. 5 veins by Cantera Mining Limited; currently inactive

Deposit Name/ NTS	Commodity	Tonnage-Grade Estimates and/or Dimensions	Ownership References	Reserve References*	Status
Thierry Mine (52O08/NW)	Cu, Ni	7 million t @ 1.88% Cu, 0.23% Ni, 15.5 million t @ 1.92% Cu	PGM Ventures Inc. (CMH 2003-2004, p.398)	UMEX 1982	Diamond drilling 2003; joint-ventured with Peabody Capital Partners Corp., January 2004
Umex–Dorothy Lake (52O06/NW)	Au	236 220 t @ 6.17 g/t Au	unstaked	OFR 5869, p.260; NM, June 11, 1990, p.13	unstaked
Zulapa (42M12/SW)	Au	700 000 t @ 0.28 opt Au to 200 m	Eabametoong First Nation	OFR 5926, p.208	inactive

**N.B. This table contains tonnage and grade estimates, referred to as "reserves" (indicated, possible, probable), which were determined at various times by methods largely unreported. It is not known if any or all of these estimates are in compliance with the reporting standards required by National Instrument 43-101.*

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Metric Conversion Table

Conversion from SI to Imperial			Conversion from Imperial to SI		
SI Unit	*Multiplied by*	*Gives*	*Imperial Unit*	*Multiplied by*	*Gives*
		LENGTH			
1 mm	0.039 37	inches	1 inch	**25.4**	mm
1 cm	0.393 70	inches	1 inch	**2.54**	cm
1 m	3.280 84	feet	1 foot	**0.304 8**	m
1 m	0.049 709	chains	1 chain	20.116 8	m
1 km	0.621 371	miles (statute)	1 mile (statute)	**1.609 344**	km
		AREA			
1 cm^2	0.155 0	square inches	1 square inch	**6.451 6**	cm^2
1 m^2	10.763 9	square feet	1 square foot	**0.092 903 04**	m^2
1 km^2	0.386 10	square miles	1 square mile	2.589 988	km^2
1 ha	2.471 054	acres	1 acre	0.404 685 6	ha
		VOLUME			
1 cm^3	0.061 023	cubic inches	1 cubic inch	**16.387 064**	cm^3
1 m^3	35.314 7	cubic feet	1 cubic foot	0.028 316 85	m^3
1 m^3	1.307 951	cubic yards	1 cubic yard	0.764 554 86	m^3
		CAPACITY			
1 L	1.759 755	pints	1 pint	0.568 261	L
1 L	0.879 877	quarts	1 quart	1.136 522	L
1 L	0.219 969	gallons	1 gallon	**4.546 090**	L
		MASS			
1 g	0.035 273 962	ounces (avdp)	1 ounce (avdp)	28.349 523	g
1 g	0.032 150 747	ounces (troy)	1 ounce (troy)	**31.103 476 8**	g
1 kg	2.204 622 6	pounds (avdp)	1 pound (avdp)	**0.453 592 37**	kg
1 kg	0.001 102 3	tons (short)	1 ton (short)	**907.184 74**	kg
1 t	1.102 311 3	tons (short)	1 ton (short)	**0.907 184 74**	t
1 kg	0.000 984 21	tons (long)	1 ton (long)	**1016.046 908 8**	kg
1 t	0.984 206 5	tons (long)	1 ton (long)	**1.016 046 90**	t
		CONCENTRATION			
1 g/t	0.029 166 6	ounce (troy)/ ton (short)	1 ounce (troy)/ ton (short)	34.285 714 2	g/t
1 g/t	0.583 333 33	pennyweights/ ton (short)	1 pennyweight/ ton (short)	1.714 285 7	g/t

OTHER USEFUL CONVERSION FACTORS

	Multiplied by	
1 ounce (troy) per ton (short)	31.103 477	grams per ton (short)
1 gram per ton (short)	0.032 151	ounces (troy) per ton (short)
1 ounce (troy) per ton (short)	20.0	pennyweights per ton (short)
1 pennyweight per ton (short)	0.05	ounces (troy) per ton (short)

Note: Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in co-operation with the Coal Association of Canada.

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